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An Investigation of Implicit Measurement Techniques amongst Low Risk and Forensic Samples

Sinead Devine

Thesis submitted to University College Cork as fulfilment of the requirements for the award of PhD Degree.

Faculty of Arts, Humanities and Social Sciences
School of Applied of Psychology

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3rd January, 2014

Dedication

This thesis is dedicated to the memory of my son, Gabriel Devine.

Another year has come and you are still so far away.

You are always in my heart, each and every day.

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Declaration

I hereby declare that this dissertation has not been submitted to any other institution, and is, except where otherwise stated, the original work of the researcher.

Signed: _____ **Date:** _____
Sinead Devine

Abstract

Difficulties with utilising self- report and physiological measures of assessment amongst forensic populations are well established. This study therefore seeks to investigate a number of computerised implicit based measures amongst sexual offenders, nonsexual offenders and low risk samples. Implicit measurement is a term applied to measurement methods that makes it difficult to influence responses through conscious control and awareness. The paradigms included are the Implicit Association Test (IAT), Rapid Serial Visual Presentation (RSVP) and the Viewing Time measure (VT). The IAT proposes that people will perform at greater speed and accuracy on a task when they depend on well-practiced cognitive associations. The RSVP task requires participants to identify a single target image that is presented amongst a series of rapidly presented visual images. RSVP operates on the premise that if two target images are presented within 500milliseconds of each other, the possibility that the participant will recognize the second target is significantly reduced when the first target is of salience to the individual. This is known as the Attentional Blink. VT is based on the premise that people will look longer at images that are of salience. The Structured Clinical Interview for disorders was also included (SCID 11). Its usage is well established amongst clinical and non clinical samples. It is a more established explicit measure of assessment than implicit measurement techniques. Results showed that the IAT, VT and RSVP measures show potential when used amongst forensic samples. On the VT task, child sexual offenders took longer to view images of children than did low risk groups. On the RSVP task nude images over clothed images induced a greater attentional blink amongst low risk and offending samples. Sexual offenders took longer than low risk groups on word pairing tasks in which the sexual words were paired with adult words on the IAT. It is recommended that more erotic stimulus items be included on the VT and RSVP measures to better differentiate sexual preference between offending and non offending samples. A pictorial IAT is also recommended. These findings provide the basis for the development of these implicit measures amongst forensic samples.

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Finally, to my two beautiful sons, Sean and Fionn. I love you both dearly. This is for you.

Chapter 1:Typologies and Forensic Assessment of Sexual Offenders

1. 1 Introduction

With an ever increasing alertness to sexual and violent crimes in our society the protection of the vulnerable has become a vast societal worry. The successful identification, assessment and management of those with deviant sexual and/or violent interests are fundamentals in ensuring such protection. As sexual offenders often exhibit deviant sexual arousal patterns consistent with their offending, deviant sexual preferences represent a central part of sex offender assessment (Marshall, Fernandez, Hudson, & Ward, 1998). In addition to highlighting vital insight into the dynamics of offender motivation and behaviour, measures of deviant sexual arousal have been shown to have strong associations with sexual and violent recidivism, predominantly for men who sexually abuse children (Hanson & Bussiere, 2003; Marshall & Fernandez, 2003; Quinsey, Lalumiere, Rice, & Harris, 1995). This corresponds to the sexual preference hypothesis (Lalumiere & Quinsey, 1994) which suggests that deviant sexual behaviour stems directly from a deviant sexual preference.

As a means to assess the deviant sexual interests of sexual and violent offenders, researchers have engaged in a number of standardized methods based on the stages of arousal. (Singer, 1984) proposed that the process of sexual arousal consisted separate components –aesthetic, approach and genital response, which can be experienced independently or sequentially (Wright & Adams, 1994). The first phase, aesthetic response, consists of an emotional reaction to the desired object. This produces an

increased attentional response, noticed by increased head and eye movements towards the desired object. The second phase, approach response, involves physical movement of the body towards the desired object. As proximity increases, so too does general autonomic and somatic arousal, which leads to the third phase –genital response. Additional expressions of autonomic arousal, such as an increase in electro dermal activity, heart rate and respiration have also been objectively measured however they are not unique to sexual arousal (Proulx, 1989). Therefore, it has been suggested by (Singer, 1984) and other advocates of penile plethysmograph that the genital response represents "the most reliable and convenient way to measure arousal in males" (p.234). Following this, physiological methods of exploring sexual preference have dominated the assessment of sexual offenders for some time. Identifying a sexual offender's sexual interest is important in clinical forensic settings not only to predict the possible rate of recidivism (Marshall, 1996) but also to improve decisions regarding sentencing, institutional placement, recommendations with regard to parole and the restrictiveness of conditions attached to supervision in the community. Establishing sexual interest is also important in terms of determining treatment needs, as research on sex offender recidivism has identified deviant patterns of sexual arousal as one of the most important predictors of therapeutic failure (Perkins, Hammond, Cole, & Bishop, 1998).

1.2 Forensic Samples

By their nature of being a manipulative and deceiving population, forensic populations, are extremely non-compliant. Given the threat to the offender's social standing, integrity, and family stability, pressure to deny and distort information about having committed a sexual offense is extremely high (Schneider & Wright, 2004).

Recent research has suggested that denial and empathy are not related to recidivism. In a Meta analysis of 82 recidivism studies inclusive of sexual offenders, it was reported that variables used in clinical assessment such as victim empathy had no relationship to recidivism (Hanson & Morton-Bourges, 2004). The authors suggest that this lack of relationship may be linked to the difficulties of assessing sincere remorse in forensic settings. This finding would highlight the difficulties of measuring a variable such as empathy. This analysis also showed that antisocial orientation was the major predictor of violent recidivism and that dynamic risk factors such as sexual preoccupations are useful treatment targets. This study finally illustrated how variables often focused on in sex offender treatment programmes such as denial and victim empathy had little or no relationship with sexual or violent recidivism. Numerous attempts have been made to conceptualise denial both on a continuum (Laflen & Strum, 1994; Sgroi, 1989) and categorically (Barrett, Sykes, &-Byrnes, 1986; Langevin, 1998). In addition to the problems faced by the forensic population, the intrusiveness of physiological sexual preference assessment methods seriously hinders the gathering of normative data. (Plaud, Gaither, Hegstad, & Rowan, 1999) noted that participant embarrassment accounted for 63% of those not volunteering for sexual preference assessment using physiological methodologies. They also demonstrated that the stimuli used influences what types of individuals volunteer for such research. Personality and sexuality differences have been noted between those that volunteer and those that do not, with volunteers typically masturbating more, having more experiences with sexual material and more sexual partners, scoring higher on measures of sexual esteem and sexual sensation seeking, and indicating greater tendencies toward interpersonal exploitation

(Wiederman, 2000). Such findings have serious implications for the generalizability of research findings and indicate an urgent need to develop less intrusive measures which may attract more representative samples. Forensic assessment of deviant sexual preferences can be largely divided into physiological, self-report and attentional procedures. As this research study is inclusive of a sample of child sexual offenders and rapists, typologies of sexual offenders and the Irish Law pertaining to these categories of offences shall firstly be addressed. This is followed by a critique of current Forensic Assessment techniques.

1.3 Typologies of Sexual Offenders

The most commonly cited classification of child molesters is presented by (Groth & Birnbaum, 1978), who separated this category of offenders into the categories of fixed and regressed. According to this model fixated offenders are characterised by having an obsessive attraction to children that commences when the offender is in adolescence. This model proposes that this offender has actions that are typical in nature and not the result of any stress and the person will have practically any age appropriate relationship with someone of the opposite sex. Additionally most of the fixated offenders equate their own behaviour to the child's and believe themselves to be a pseudo peer to the victim (Danni & Hampe, 2000). The regressed offender's child molesting commences when the offender is in adulthood and is more often motivitated by external stressors. which compromise of such problems as alcohol and drug usage. This may result in the offender molesting a child in an effort to cope. Unlike the fixated offender, this individual views the child as a pseudo adult such as a partner or wife replacement that often complements age appropriate sexual relationships (Danni et al.,

2000). In summary this typology was created with the intention to explore sexual offender's needs and interests. According to this model, individuals in the fixated group represented individuals whose sexual desires and preferences centre on children, desires that would have developed in adolescence.

Groth et al. (1978) proposed that such offenders have healthy sexual contacts with age–appropriate partners; however they describe the individual as being emotionally immature, and often preoccupied with children. This individual may go to extreme lengths to form "relationships" with vulnerable children. The authors suggest that these sex crimes against children are very often pre meditated with offenders often grooming young male children who are not related to them. It is too noted that sex offenders in the fixated subtype are deemed to be at higher risk for continuing to commit additional sex offenses because of their primary deviant sexual interests in children and because they target male victims (Groth et al., 1978). This typology is also inclusive of the regressed sexual offender. Authors propose that this offender may have "normal" sexual interests and have relationships with appropriate partners. They may not be overly concerned with children but may engage in sexual contact with children as a way to cope with stress or to substitute for an appropriate partner. The typology defines the offender as impulsive, with their behaviour not as planned as the fixated offender.

Groth et al. (1987) also made classifications and documented subtypes of men who rape women. They devised the following subtypes: The Anger Rapist, Power Rapist, and the Sadistic Rapist. The typology explains the anger rapist as one who may rape as a means to vent anger and the act may not necessarily be carried out for sexual gratification. This type of offender maintain a relationship, however it may be defined

by conflict, in turn causing the individual to take out their anger on a victim. According to Groth et al. (1987) this offender can be impulsive and carry out unplanned attacks on their victims and may also use a level of force on their victim.

In contrast to the anger rapist, the power rapist is notably motivated by power. According to the typology men in this subtype are concerned with maintaining a level of power of their victims than in actually causing them physical harm. They may have issues surrounding being insecure about their masculinity, feelings of being inadequate or of being controlled by others. (Groth et al., 1987) suggest that the act of rape to this offender may be as a means to demonstrate their “manhood”. They show different behaviours to the anger rapist, in that very often their attacks may be pre meditated and they may seek out victims that are easy targets. The last subtype in the typology proposed by Groth et al. (1987) is that of the sadistic rapist, whom they believe to be the most dangerous of the aforementioned types. This offender experiences sexual arousal from hurting their victims and may mutilate and hurt their victims and in some cases kill their victims.

Closely related to this model has been the highly complete work by (Prentky, Knight, & Lee, 1997). This model outlines six profiles of paedophiles. They are interpersonal, narcissistic, exploitative, muted sadistic aggressive and sadistic. This model was further developed by Prentky et al. (1997) at the Massachusetts Treatment Centre of Sexually Dangerous Persons (MTC:R). This model offers the best example of research to date in viewing sex offenders from a multi dimensional perspective. Danni et al. (2000) extended these classification criteria to consist of paedophiles or hebophiles, coupling them with a classification of 'regressed' or 'fixated' (Knight & Prentky, 1990).

Prentky and Knight (1991) suggested that power and sexual factors are not separate from each other and that anger and sadistic sexual factors can overlap. According to McCabe and Wauchope (2005), sexual factors are inherent in all crimes of rape, which may be an explanation as to why researchers very often focus on other factors such as power or anger in attempt to differentiate one type of rape from another.

Their typology was both sophisticated and complex. It examined child sexual abusers and men who committed acts of rape through statistical procedures. In regards to child molesters this typology focuses on the degree of fixation and the amount of contact the individual engaged in. Similar to the typology proposed by Groth et al. (1987), this typology too makes the distinction between fixated or regressed offenders. Knight and Prentky (1987) make the following distinctions in relation to child molesters. For individuals whose sexual interest primarily involves children, they are differentiated as being high fixation, and for those who have "normal" or age – appropriate sexual preference, they are placed into the low fixation group. Researchers then subdivided individuals based on whether or not their level of social competence was high or low. These subtypes are as follows. Those with high fixation and high social competence, those with high fixation and low social competence, those with low fixation and high social competence and finally offenders with a low fixation and a low social competence. Knight and Prentky (1990) also draw attention to another level of consideration that needs to be outlined. That is the amount of contact that the offender has with children- either high or low. They divide those with high levels of contact into subtypes. A high amount of contact may be indicative of one trying to meet their social needs, emotional needs or sexual needs. In the second subtype contact may be made if

the offender is trying to meet their own needs for sexual gratification without having regard for the victim. Stemming from this consideration, two additional subtypes were included. The high contact/interpersonal and the high contact/narcissistic. For offenders with low amount of contact with children, researchers based their subtypes on the following. That is the extent to which the offender caused physical harm to their victims (high or low). From this they were subdivided into whether or not they may be considered sadistic or non sadistic. These further four typologies were as follows: Low contact/low physical injury/non–sadistic, Low contact/low physical injury/sadistic Low contact/high physical injury/non–sadistic Low contact/high physical injury/sadistic.

Prentky and Knight (1990) also categorised rapists. They examined and documented what they considered to be the primary motivation for rape. They describe opportunity, pervasive anger, sexual gratification, and vindictiveness as possible explanations for rape. The rapist, according to this typology, could be further subdivided on factors such as developmental, biological and environmental factors. It was proposed that these factors result in varying degrees of antisocial behaviour, sexualized aggression, impulsivity, cognitive distortions, and deviant sexual arousal. The opportunistic rapist was as a person who displayed poor impulse control and appeared to be driven by opportunity (Prentky et al., 1990). They may not display aggression during the offence but they may use force to complete an offence. This group was further subdivided depending upon their degree of social competence being either high or low. Prentky and Knight (1990) also describe in their typology both the pervasively angry and the rapist who has extreme sexual fantasies that they incorporated into the act of rape. The pervasively angry rapist was described as one with impulsive

behaviour and possibly has issues with anger and antisocial behaviour. The sexual gratification category was described by Prentky and Knight (1990) as being comprised of men who have extreme sexual fantasies that are integrated into the crime of rape. These men may display sadistic fantasies. For the non–sadistic individuals in this category, they are further differentiated according to their level of social competency—low or high. Finally, this typology includes the vindictive rapist, where men are subdivided for either having high or low levels of social competency. The vindictive rapists direct their anger primarily toward women. Their offenses are characterized by humiliating, degrading, and physically harmful behaviour toward the victim.

Another model proposed for classifying sex offenders is the Self Regulation Model by Ward and Hudson (1998; 2000). It is not necessarily considered a typology, but it does classify sexual offenders into subgroups based on whether their desire is to commit a sexual offence or to avoid committing a sexual offence (Ward & Hudson, 1998; 2000). Researchers here outline four pathways to offending behaviours. The avoidant – passive person may wish to avoid engaging in sexual offending behaviours, but may not necessarily have the skills such as coping strategies to refrain. The avoidant- active offender may have the desire not to offend but the self management strategies they use may be ineffective and may increases their chances of offending. Sex offenders in the approach- automatic category may have a desire for deviant sexual activity but may not necessarily plan to offend (with the exception of when a situation may present itself). They may use cognitive distortion as a mean to justify and continue offending behaviours. Finally the approach- explicit category of sexual offenders is inclusive of desires to engage in sexual acts of deviance and plans their crimes in

advance. These individuals have difficulty regulating their behaviour or may work hard to create the opportunity that will increase their chances of offending (Ward & Hudson, 1998; 2000).

Other typologies of child molesters have to be proposed. One such model has been offered by Itzin (2000). This model has been described as “a continuum typology of child sexual abuse”, and describes the characteristics of child sexual abusers. According to this typology, all child sexual abuse is carried out largely by men who choose to sexually abuse children because they believe it is adequate to do so, that it is right or because they choose to allow their desire to override any reserve they may have. The offender may rationalise this in a number of ways. The author here suggests that whatever the association of the abuser to the victim, and whatever sexual preference of the abuser, the majority of abuse occurs in the home of the victim by known adults with only a small percentage being perpetrated by strangers. It is suggested that intimidation and or violence may occur in various forms ranging from the calculating to the brutal in many different situations and contexts. The continuum typology has the advantage of bringing together the cross- over between incest and paedophilia, of being conceptually comprehensive of men who sexually abuse both their own and other people’s children and who may target children from both sexes. This model shows how bringing incest and paedophilia together conceptually puts the stress on the commonality of their characteristics, and considers the fact that the main discourse of policing and public policy s largely constructs child sexual abuse as paedophilia and paedophilia as synonymous with sex offenders. This typology also addresses the apprehension about the dangers of mutually exclusive categories, by acknowledging the crossover and

connections between incest and paedophilia typologies. Itzin (2000) presents some very constructive information by pointing out some of the difficulties that exist with trying to define what is meant by child sexual abuse. The author emphasises some restrictions of the explanations and categories of child sexual abuse based on typologies and sex offender classifications. Itzin (2000) describes it as hazardous to generate classifications of sexual abuse which are built as mutually elite categories because this pathologises some men and shift attention from the recognition of abusers as 'ordinary men.

1.4 Finkelhor's Four Factor Model

Finkelhor (1984) proposed a multi-factor model explaining why an individual may engage in the act of paedophilia. A model was proposed inclusive of the contributing factors that clinicians and researchers had believed to be remote in understanding sexual abuse. Finkelhor's Model was instead inclusive of factors which related to the victim, abuser, and the family and also incorporated social and cultural factors. It has contributed to the overall understanding as to why sexual abuse may occur. According to Finkelhor and Araji (1986) all the theories appear to be directed to explaining one of four factors;

> Emotional congruence-why the adult has an emotional need to relate to a child; sexual arousal-why the adult could become sexually aroused by a child; blockage-why alternative sources of sexual and emotional gratification are not available and disinhibition-why the adult is not deterred from such an interest by normal prohibition. (p. 145)

This model includes both intra and extra familial sexual abuse. This model appears to include more than other approaches, in the sense that it examines psychological and sociological factors. Finkelhor et al. (1986) suggests a muti factor approach to understanding paedophilia as opposed to single accounts proposed in the literature. This model outlines all of the factors that may contribute to child sexual abuse and are grouped into four preconditions. They are motivation, internal inhibitors, external inhibiters and resistance. Finkelhor et al. (1986) proposes that the abuser needs to have a particular motivation in order to abuse. This typology refers to emotional congruence. This congruence occurs when a person's emotional needs are met through sexual contact with a child. "Some of the most popular theories about paedophilia are essentially attempts to explain why an adult would find it emotionally satisfying to relate sexually to a child" (Finkelhor & Araji, 1986, p. 152).

The second factor proposed in this particular model is that of sexual arousal in which the child essentially is the main source of sexual gratification for the adult abuser. "In some pornography, themes of sex with children are mixed in with themes of sex with adults. In masturbating to this material, the consumers may come to find children arousing" (Finkelhor & Araji, 1986, p. 152).

Another theory proposed by Finkelhor et al. (1986) is that some individuals are unable to fulfil their needs in relationships with adult peers and is this is referred to as blockage. "For some reason, in the paedophile, these normal tendencies are blocked, and thus the sexual interest in children develops (Finkelhor & Araji, 1996, p. 153).

As mentioned earlier, this typology also proposed the following considerations concerning those who commit sexual offences against children. They are internal

inhibitions, external inhibitions and resistance. According to this model, the abuser must deal with any internal inhibitions that they may have and in turn disinhibition may bring about motivation to abuse a child. The abuse may take place across what Finkelhor describes as continuous dimensions. The first dimension is the strength of paedophilic interest-that is, how strongly motivated paedophiles are to have sex with children, as evidenced for example by the number of contacts they have and the persistence of this interest over time. The second dimension is the exclusivity of paedophilic interests that is, what percentage of total sexual experiences and fantasies are involved with children as opposed to other partners". (Finkelhor & Araji, 1986, p.156)

Finally, Finkelhor's model outlines what is meant by external inhibitors and resistance. A child left unsupervised has been pinpointed by these researchers as a massive contributing factor to sexual abuse of children as the abuser may have access and the opportunity to abuse the child. Resistance then means that the abuser has to overcome the child's resistance to being sexually abused. According to the model, resistance may have different possible outcomes. The child may resist but be abused through the use of force, the child may resist but coercion may be used. Finally, a child may overtly say no or covertly by signalling that the adult may be detected for their actions. To sum up this model, the abuser must be motivated and have the ability to overcome any internal inhibitions. The abuser then overcomes external inhibitors and resistance of the child (Finkelhor & Arajji, 1986).

1.5 DSM-V Paedophilic Disorder.

The Diagnostic and Statistical Manual of Mental Disorders**,** describes pedophilic disorder as follows:

A. Over a period of at least 6 months, recurrent, intense sexually arousing fantasies, sexual urges, or behaviors involving sexual activity with a prepubescent child or children (generally age 13 years or younger).

B. The person has acted on these urges, or the sexual urges or fantasies cause marked distress or interpersonal difficulty.

C. The person is at least age 16 years and at least 5 years older than the child or children in Criterion A.

Note: Do not include an individual in late adolescence involved in an ongoing sexual relationship with a 12- or 13-year-old.

Specify if: Sexually Attracted to males, sexually attracted to females sexually attracted to both.

Specify if: Limited to Incest

Specify type: Exclusive Type (attracted only to children), Nonexclusive Type

Sex offender typologies definitions are explained in the DSM can be very useful. Typologies illustrate the diversity in sex offenders—the victims they select, their varying motivations to sexually offend, their patterns of offending, and the specific kinds of issues that seem to underlie or drive their offending. However not all sex offenders may fit neatly into any one typology and may require interventions that are unique to each offender. It is perhaps necessary to state that though subtypes are helpful,

they cannot be relied upon solely when considering intervention and the different risks that such offenders pose to society.

Sex offender typologies are generally divided by age, gender and the relationship to the victim in question. However, the literature is indicative of cross over rates concerning victims when these groups are examined. Heil, Ahlmeyer, and Simons (2003), in a study inclusive of polygraph testing, found that a significant number of rapists admitted child victims. Similar findings were reported by O'Connell (1998) who reported that 64% of rapists admitted to sexually molesting female children. Findings such as theses would suggest that rapists may also pose a threat to children. Abel and Osborne (1992) found that out of a sample of 349 paraphiliacs that 43% had also victimised adolescents. Heil, Ahlmeyer, and Simons (2003) offer the following explanation "...because the prison culture considers child sexual abuse the lowest status crime, offenders have no incentive to disclose this behaviour" (p.23). Heil, Ahlmeyer, and Simons (2003) also suggest that the actual rate of crossover in sexual offending is much higher than is typically acknowledged. These authors recommend that rather than classify offenders by their victim choice, they should be evaluated in terms of their "preferred and expanded victim pool" (p.23). The reason offered is because preference can change over time and may be expanded upon if a preferred victim is not available. As this study is inclusive of a sample of child sexual offenders and rapists it is necessary to outline the laws pertaining to these offenders in Ireland.

1.6 Irish Law

Under current Irish legalisation, there is no offence category that defines the offence of child sexual abuse. However, Section 2 of the Criminal Law (Sexual

Offences) Act (2006) refers to defilement of a child less than 15 years and defilement of a child less than 17 years. In relation to defilement of a child under 15 years of age, Section 2 of the Criminal Law (Sexual Offences) Act (2006) makes it a criminal offence to engage or attempt to engage in a sexual act with a child under the age of 15 years.

> 2. – (1) Any person who engages in a sexual act with a child who is under the age of 15 years shall be guilty of an offence and shall be liable on conviction on indictment to imprisonment for life or a lesser term of imprisonment.
>
> (2) Any person who attempts to engage in a sexual act with a child who is under the age of 15 years shall be guilty of an offence and shall be liable on conviction on indictment to imprisonment for life or a lesser term of imprisonment.
>
> Section 2 (3) of the Criminal Law (Sexual Offences) Act 2006 also provides that the accused may argue they honestly believed the child was aged 15 years or over, however it is not a defence to show that the child consented to the sexual act Section 2 (5).
>
> (3) It shall be a defence to proceedings for an offence under this section for the defendant to prove that he or she honestly believed that, at the time of the alleged commission of the offence, the child against whom the offence is alleged to have been committed had attained the age of 15 years.
>
> (4) Where, in proceedings for an offence under this section, it

> falls to the court to consider whether the defendant honestly believed that, at the time of the alleged commission of the offence, the child against whom the offence is alleged to have been committed had attained the age of 15 years, the court shall have regard to the presence or absence of reasonable grounds for the defendant's so believing and all other relevant circumstances.
>
> (5) It shall not be a defence to proceedings for an offence under this section for the defendant to prove that the child against whom the offence is alleged to have been committed consented to the sexual act of which the offence consisted.

In relation to the defilement of a child under the age of 17 years, Section 3 of the Criminal Law (Sexual Offences) Act (2006) as amended by Section 5 of the Criminal Law (Sexual Offences) (Amendment) Act (2007) makes it a criminal offence to engage or attempt to engage in a sexual act with a child less than 17 years.

> 3.—(1) Any person who engages in a sexual act with a child who is under the age of 17 years shall be guilty of an offence and shall, subject to subsection (3), be liable on conviction on indictment— a) to imprisonment for a term not exceeding 5 years, or (b) if he or she is a person in authority, to imprisonment for a term not exceeding 10 years.
>
> (2) Any person who attempts to engage in a sexual act with a

> child who is under the age of 17 years shall be guilty of an offence and shall, subject to subsection (4) be liable on conviction on indictment— (a) to imprisonment for a term not exceeding 2 years, or (b) if he or she is a person in authority, to imprisonment for a term not exceeding 4 years.

Section 1 of the Criminal Law (Sexual Offences) Act 2006 recognizes a person in authority as:

> (a) a parent, step-parent, guardian, grandparent, uncle or aunt of the victim, (b) any person who is, for the time being, in loco parentis [in place of parent or parents] to the victim, or (c) any person who is, for the time being, responsible for the education, supervision or welfare of the victim.

Sections 3 (5) and 3 (6) also provide that the accused may argue that he or she honestly believed that the child was aged 17 years or over. However, regarding the defilement of a child less than 15 years of age, it is not a defence to show that the child consented to the sexual act.

> (5) It shall be a defence to proceedings for an offence under this section for the defendant to prove that he or she honestly believed that, at the time of the alleged commission of the offence, the child against whom the offence is alleged to have been committed had attained the age of 17 years.
>
> (7) It shall not be a defence to proceedings for an offence under

> this section for the defendant to prove that the child against whom the offence is alleged to have been committed consented to the sexual act of which the offence consisted.

The Criminal Law (Sexual Offences) Act (2006) further stipulates that any prosecution of a child under the age of 17 years for this offence requires the consent of the Director of Public Prosecutions. Furthermore, a person who is convicted of this offence and is not more than two years older than the victim is not subject to the requirements of the Sex Offenders Act (2001). Finally, a female aged under 17 years who has sexual intercourse may not be convicted of an offence on that ground alone.

1.7 Irish Laws (Rape)

The crime of rape may be charged under the Criminal Law (Rape) Act (1981) or the Criminal Law (Rape) (Amendment Act) 1990. The circumstances of the case, age of the victim and evidence will decide which legislation will apply.

The maximum penalty in Ireland for a rape offence is life imprisonment. There are related offences under the law of attempted rape, and separately of aiding and abetting a rape (that is, assisting another person to commit a rape).

Section 2 of the Criminal Law (Rape) (Amendment) Act (1990) sets out the law in Ireland on sexual assault. A sexual assault is an indecent assault on a male or a female. The maximum sentence is 10 years imprisonment or 14 years if the victim is aged less than 17 years. Aggravated sexual assault is sexual assault involving serious violence or the threat of serious violence. In common with rape offences, the maximum sentence for aggravated sexual assault is life imprisonment. In this Act “rape under section (4)” means a sexual assault that includes—

> (a) Penetration (however slight) of the anus or mouth by the penis, or (b) penetration (however slight) of the vagina by any object held or manipulated by another person.
>
> (2) A person guilty of rape under section 4 shall be liable on conviction on indictment to imprisonment for life.
>
> (3) Rape under section 4 shall be a felony.

The amended Act brought about the Abolition of marital exemption in relation to rape.

> 5.—(1) any rule of law by virtue of which a husband cannot be guilty of the rape of his wife is hereby abolished. Criminal proceedings against a man in respect of the rape by him of his wife shall not be instituted except by or with the consent of the Director of Public Prosecutions.
>
> The capacity to commit offences of a sexual nature is defined as below.
>
> 6.—any rule of law by virtue of which a male person is treated by reason of his age as being physically incapable of committing an offence of a sexual nature is hereby abolished.

Corroboration of evidence in proceedings in relation to offences of a sexual nature is outlined as below.

> 7.—(1) Subject to any enactment relating to the corroboration of evidence in criminal proceedings, where at the trial on

indictment of a person charged with an offence of a sexual nature evidence is given by the person in relation to whom the offence is alleged to have been committed and, by reason only of the nature of the charge, there would, but for this section, be a requirement that the jury be given a warning about the danger of convicting the person on the uncorroborated evidence of that other person, it shall be for the judge to decide in his discretion, having regard to all the evidence given, whether the jury should be given the warning; and accordingly any rule of law or practice by virtue of which there is such a requirement as aforesaid is hereby abolished.(2) If a judge decides, in his discretion, to give such a warning as aforesaid, it shall not be necessary to use any particular form of words to do so. The following are alternative verdicts as set out by this act.

8.—(1) A person indicted for rape may, if the evidence does not warrant a conviction for rape but warrants a conviction for rape under section 4 or aggravated sexual assault or sexual assault, be found guilty of rape under section 4 or of aggravated sexual assault or of sexual assault, as may be appropriate.

(2) A person indicted for rape may, if the evidence does not warrant a conviction for rape but warrants a conviction for an offence under section 1 or 2 of the Criminal Law Amendment Act, 1935, or under section 3 of the Criminal Law Amendment

Act, 1885, be found guilty of an offence under the said section 1, 2 or 3, as may be appropriate.

(3) A person indicted for rape under section 4 may, if the evidence does not warrant a conviction for rape under section 4 but warrants a conviction for aggravated sexual assault or for sexual assault, be found guilty of aggravated sexual assault or of sexual assault, as may be appropriate.

(4) A person indicted for aggravated sexual assault may, if the evidence does not warrant a conviction for aggravated sexual assault but warrants a conviction for sexual assault, be found guilty of sexual assault.

(5) A person indicted for an offence made felony by section 1 of the Criminal Law Amendment Act, 1935 , may, if the evidence does not warrant a conviction for the felony or an attempt to commit the felony but warrants a conviction for an offence under section 2 of the Criminal Law Amendment Act, 1935 , or section 3 of the Criminal Law Amendment Act, 1885, or rape under section 4 or aggravated sexual assault or sexual assault, be found guilty of an offence under the said section 2 or 3 or of rape under section 4 or of aggravated sexual assault or of sexual assault, as may be appropriate. The following law outlines issues pertaining to consent.

9.—It is hereby declared that in relation to an offence that

> consists of or includes the doing of an act to a person without the consent of that person any failure or omission by that person to offer resistance to the act does not of itself constitute consent to the act.

Finally, the trial for certain offences by the Central Criminal Court is as follows.

> 10.—A person indicted for a rape offence or the offence of aggravated sexual assault or attempted aggravated sexual assault or of aiding, abetting, counseling or procuring the offence of aggravated sexual assault or attempted aggravated sexual assault or of incitement to the offence of aggravated sexual assault or conspiracy to commit any of the foregoing offences shall be tried by the Central Criminal Court.

The legal definitions, as outlined above, are important and they need to be considered from judicial perspectives. While understanding the law is important it is perhaps important to state that they do not aid our understanding as to why a person commits the act of rape or sex crimes against children. One needs to understand motivations for these offenders' behaviours as it is ultimately these aspects that are central to developing assessment and management techniques with these populations. A critique of current forensic assessment techniques is outlined below.

1.8 Physiological Assessment of Sexual Interest

Physiological assessment of sexual interest is characterised by penile plethysmography (PPG) which has become one of the most widely used techniques in sex offender assessment research. Physiological assessment methods measure

autonomic responses (e.g. heart rate, pulse amplitude, electro dermal) (Kalmus & Beech, 2005). Penile Plethysmography, was developed by Kurt Freund in 1957. It is concerned with the third stage of Singer's (1984) erotic response model, and involves objectively measuring penile tumescence as a physiological function of sexual arousal in male subjects. This can involve either measurement of volumetric (referred to as phallometry) or circumferential (referred to as plethysmography) changes in penile tumescence to varied sexual and non-sexual stimuli. The phallometric test (penile plethysmography) is according to Kolla, Blanchard, Philip ,Klassen, Kuban, and Blak (2010)

> ...a psychophysiological tool used to assess the erotic age and gender preferences of adult males. In volumetric phallometry, the penile blood volumes of patients are measured in a laboratory setting while they are exposed to a standardized set of sexually themed stimuli showing adults and children. (p.503)

As the genital response is the only response specific to sexual arousal, penile plethysmography provides a direct and objective means of assessing sexual preference. The use of the plethysmography is based on the premise that increased penile blood volume is associated with sexual arousal in men (Bancroft, Jones, & Pullan, 1966) and that measures of current sexual arousal are reflective of overall sexual preferences or sexual responsiveness.

To date several very detailed reviews concerning plethysmography have been published (Marshall & Fernandez, 2000; Murphy & Barbee, 1994; O'Donoghue & Letourneau, 1992). Studies have demonstrated that the technique is effective in

differentiating heterosexual from homosexual arousal (Freund, 1963), paedophilia (Abel, Becker, Murphy, & Flanagan, 1981; Avery-Clark & Laws, 1984; Freund, 1963) and rape (Abel, Barlow, Blanchard, & Guild, 1977; Lalumiere & Quinsey, 1994; Quinsey, Chaplin, & Varney, 1981). Plethysmography findings seem coherent in proposing that child molesters find children more sexually attractive than do non-molesters (Looman & Marshall, 2001) and that recidivists view children as more attractive than do non- recidivists (Hanson & Morton-Bourgon, 2004; 2005). However, the basic assumption underlying plethysmography –that genital response is indicative of sexual desire –has been challenged by research documenting impotence and involuntary erections (Masters & Johnson, 1966 cited in Brecher & Brecher, 1970) and the effect of injury (Kennedy & Over, 2005). Broad acceptance of research findings is also limited due to considerable issues regarding its reliability and validity as a sex offender assessment technique (Laws & Gress, 2004; Marshall & Fernandez, 2000). According to some, plethysmography is a subjective procedure which lacks standardization both in administration (variation in stimuli, format and mode of presentation) and interpretation (no uniform scoring or reporting procedure) (Laws & Gress, 2004) which limits the reliability and validity of the results. The type of stimuli required to facilitate discrimination on the basis of sexual arousal are frequently sexually explicit in nature. (Rice & Chaplin, 1994) demonstrated that discrimination between sex offenders and non sex offenders is enhanced by the use of brutal and coercive stimuli, specifically when dealing with rapists or sexual sadists. The use of such images in discerning individuals with paedophilic, violent, or other deviant sexual interests raises ethical as well as legal concerns.

Although some studies have documented high internal consistency and classification accuracy for Plethysmography (e.g. Laws, Hanson, Osborn, & Greenbaum, 2000), there often remains a large proportion of wrongly classified participants (McConaghy, 1999). Looman and Marshall (2001) reported discriminative error rates of between 23% and 65% in classifying rapists as child-sex offenders and vice versa. The tendency of normal men to show some degree of arousal to deviant stimuli is well documented in the literature (e.g. Hall, Hirschman, & Oliver, 1995) and presents a problem to the discriminative validity of penile plethysmography. The lack of a consensus of what constitutes 'normal' patterns of sexual arousal, what constitutes a minimum level of arousal required for interpretation or a full erection (Laws & Osborn, 1983).

There is also no agreement on how to treat low responders. Low responders are typically excluded from statistical analyses because they show no response variation between different categories of experimental stimuli (Golde, Strassberg, & Turner, 2000). Evidence suggests that excluding individuals based on low responding is unwarranted. Research has demonstrated that low responding is highly correlated with social desirability scales (Looman, Maillet, Abracen, & Di Fazio, 1998) as well as the judicial status of the offender (Castonguay, Proulx, Aubut, Mc Kibben, & Campbell, 1993) which may suggest an association between low responding and voluntary suppression. This is of particular concern given the finding that low responders, have been noted to represent between 20% to 75% of participants in published studies (Looman et al., 1998). Although the PPG method appears less open to dissimulation than verbal report, several previous studies have shown that subjects can alter their

phallometric responses especially when taught (Quinsey & Chaplin, 1988) or motivated to do so (Lalumiere & Earls, 1992). While numerous attempts have been made to both detect attempted faking (Freund et al., 1988) and to interfere with it (Proulx, Cote, & Achille, 1993; Quinsey & Chaplin, 1988), Marshall and Fernandez (2000) highlight that the idiosyncratic nature of cognitive faking strategies makes it virtually impossible to prevent or detect dissimulation. They posit that deviant response patterns are evident only in child molesters who admit having offended and admit having multiple victims. This is in line with previous research which highlighted the reduced diagnostic potential of the PPG with non-admitters (Freund & Watson, 1991). The point being highlighted here is as follows. That is child sexual offenders and paedophiles will respond differently on the PPG, hence the odd findings that are emerging from the literature. Marshall et al. (2003) note the heterogeneity on most of the characteristics of sexual offenders and warn of the danger of making the assumption that phallometry will rightly identify all such offenders. Because of the differences amongst sexual offenders when considering their type of victim and the frequency of attacks on victims, one also needs to consider how this may affect the outcome of PPG testing. Pearse (1986) notes that if an offenders experience at sexual molestation plays a role in causing deviant sexual arousal preference, in light of what research shows about stimulus generalisation, one would not expect incest offenders to show arousal to unfamiliar children. The aforementioned author refers to studies that have been carried out in the area of stimulus generalisation. Such studies illustrate how the broader the sample of class stimuli a person has reinforcing experience with the broader, will be the generalisation gradient. In this instance, non familial child molesters with many victims should, therefore, show

arousal to unfamiliar children, which is usually the type of stimulus included in typical phallometric assessment measures. Pearse (1996) also addresses the fact that incest offenders should not display arousal to novel children because they have not been sampled widely enough. Schwartz (1984) notes how the experiences of incest offenders should produce stimulus discrimination, causing a generalisation gradient that is steep and narrow. In other words, incest offenders should generate erectile responses only to their own victims or to children that are very similar to their previous victims. Freud et al (1991) note that as phallometric assessment uses visual stimuli, then incest offenders should display normative responding. The above points illustrate how sexual offenders are not a homogenous group and therefore care must be taken when making an assumption that the PPG will rightly identify all sexual offenders.

Apart from lack of standardization, penile plethysmography has other inherent problems including the requirement of expensive and invasive equipment and the requirement of a compliant and physiologically responsive subject. Additionally the PPG is considered labour-intensive and limited in use to male subjects (Laws, 2003).The penile plethysmograph is clearly an ipsative measure and it is very unlikely that the data will permit normative comparisons. Its usefulness is said to lie in the evaluation and treatment of known sex offenders, not in determining guilt or innocence or predicting future offences (Smith, 1998). According to Tong (2007), the PPG represents

...a direct and objective measurement of a man's level of sexual arousal to normal versus sexualized stimuli. Since there is a strong relationship between an individual's pattern of sexual arousal, an important first step in gauging ones propensity to sexual deviancy is to obtain an accurate assessment of that person's

sexual arousal patterns, which is what the PPG does. (p. 190). However, although the PPG is the most established indirect assessment method, it has moderate validity. It also has other problems like low reliability, fake ability, is costly and has ethical implications (Schmidt, Banse, & Clarbour, 2008).

Studies have investigated whether there is a relationship between sexual interest using other measures such as the AASI (Abel Assessment of Sexual Interest) the MMSI (The Multiphasic Sex Inventory) and sexual arousal using PPG. An outpatient sample of men accused of incest were investigated .Findings illustrate that of these 53 men, who underwent PPG, AASI and MSI testing, that there was a strong correlation between the Abel Screen and the PPG. Research in this instance also demonstrated that sexual interest, cognitive distortions and sexual arousal were linked to a notable level. This reflects the advantage of assessment measures such these as a possible replacement measure for a phallometric measure like the PPG (Tong, 2007).

Although there is no shortage of evidence highlighting the various limitations and challenging the reliability and validity of research that employs the penile plethysmograph, it continues to overshadow physiological assessment of sexual preference and remains the most scientifically regarded method for assessing sexual interest with sex offenders (Quinsey & Earls, 1990 as cited in Marshall, Laws, & Barbaree, 1990). Physiological measures while having the advantage of involuntary control and objective measurement are intrusive, highly technical, and ipsative in nature. Major concerns surround the invasiveness of the procedure as well as the ethically suspect nature of the stimuli used. As a result, subsequent research has been developed in an attempt to overcome some of these limitations. A vast amount of laboratory

research has been carried out with the goal of comprehending men's and women's reactions to materials that are sexually inappropriate. Rowland (1999) notes some four reasons why such a paradigm should be applied to the study of sexual responses. They are as follows. Firstly, that laboratory analysis allows careful control over sexual stimulus parameters; secondly, that laboratory analysis allows measurement of covert responses during arousal which would otherwise be hidden. Thirdly that laboratory based research provides a very dependable way of measuring the physiological parts of sexual response and finally that laboratory methods allow an insitu sexual situation which gives the opportunity to combine the many elements of sexual responses. Though these points illustrate the advantages of PPG assessment of sexual interest others such as Clegg and Fremouw (2009) suggest that the lack of a standardized procedure is the most notable inadequacy in the phallometric research literature and that phallometric assessment is open to faking.

1.9 Forensic Assessment of Sexual Offenders

1.9.1 Non-physiological assessment of sexual interest. An example of non-physiological methods of discerning sexual interest is a self report measures. Self-reports measures typically include the clinical interview, card sort tasks and questionnaire techniques.

1.9.2 Self reports. In the main, forensic sex offender assessments are geared towards risk appraisal or readiness for treatment. To this end sex offender treatment programmes have relied heavily upon self report as they are inexpensive and easy to use. While self report techniques are deemed useful for targeting the cognitions and beliefs that support abusive behaviour (Blumenthal et al., 1999; Geer et al., 2000),

deviant sexual interests are less accessible by such techniques. Due to the effects of deception, defensiveness, social desirable responding and impression management, self report techniques are limited in their usefulness with forensic populations. As stressed by (Beckett 1994) individuals interviewed in forensic setting seldom attend readily for an assessment and therefore are defensive and minimising in their level of sexual offending behaviours. However some advantages of self report measures have also been noted. In a study by Worling (2006) sexual arousal was assessed using three approaches. They were the affinity, a computerized assessment of unobtrusively measured viewing time (VT), the affinity self report ratings of sexual attractiveness, and a self report sexual arousal graphing procedure was utilized. The data was collected from 78 males (12-18) who revealed their sexual assaults. The researcher in this instance noted that pattern of responses to all three assessment techniques were similar (there was maximal sexual interest demonstrated and reported for adolescents and adult females.

Self report procedures could accurately discriminate between those adolescents with male victims. The affinity viewing time approach significantly differentiated those adolescents who assaulted male children from other individuals. Overall, the results suggest that structured self report data can be helpful in the assessment of adolescents who sexually offend (Worling, 2006, p. 383).

1.9.3 Questionnaire assessment. While acknowledging the clinical interview as a central component in the assessment of sexual offenders (Craissati, 1998) many clinicians maintain that offenders report deviant sexual interests more readily in a questionnaire assessment (Holland, 2000). Currently, available assessments that attempt to discern deviant sexual preference include the Clarke Sexual History Questionnaire

(CSHQ) (Paitich, Langevin, Freeman, Mann, & Handy, 1977), the Thorne Sex Inventory (TSI) (Thorne, 1966), the Multiphasic Sex Inventory (MSI) (Nichols & Molinder, 1984) and the Wilson Sexual Fantasy Questionnaire (WSFQ) (Wilson, 1978). It has been suggested that some of these techniques reveal a different pattern of responding for offending and non-offending populations (e.g. Clark Sex History Questionnaire (Langevin, Paitich, Handy, & Langevin, 1990) and the Multiphasic Sex inventory (Nichols & Molinder, 1984)) supporting their efficacy in the classification of child molesters. It is also important to consider the efficacy of using a combination of measures to ensure that an offender is being consistent in their responding. For example combining a sexual interest questionnaire with the PPG. Stinton & Becker (2008) combined the PPG, MSI- 11 self report fantasy questionnaires and the AASI. These authors interviewed people about their sexual fantasies and noted that it involved past fantasies, suggesting that the PPG and the AASI might provide more current information. They too note a correlation between the MS1-11 and the self reported fantasies. Findings in this study also illustrated that clinical interviews relating to self reported fantasies did not correlate with self report measures for the MS1-11.

1.9.4 Card sorts. Abel (1979) was one of the first researchers to use a card sort task in the assessment of sexual preferences. This technique requires individuals to rate how attractive/arousing they find certain stimuli on a set scale with the belief that across multiple card ratings, a profile of the individuals' sexual preference will emerge. Laws, Hanson, Osborn, and Greenbaum (2000) examined the diagnostic accuracy of a 130 item card sort with data obtained through penile plethysmography using both visual and auditory stimuli. Overall, the card sort was reported to have significantly higher

accuracy in discriminating boy-victim and girl-victim child sex offenders than penile plethysmography. In addition, the card sort was the only measure to provide a unique and significant contribution to classifying the sample. Laws et al. (2000) also found similar results between the Sexual Deviance Card Sort and penile plethysmography for admitting child molesters, with the plethysmography correctly classifying 82% of offenders by sex of victim and the card sort correctly classifying 86%. Nonetheless, Holland et al. (2000) stress that the Sexual Interest Card Sort Questionnaire is open to faking unless used with admitting offenders which limits its value given the characteristics of the forensic population. Further research is needed, particularly in relation to the construction and psychometric properties of the card sort technique.

1.10 Alternative Approaches to Exploring Sexual Interest

Relational frame theory (Hayes, Barnes-Holmes, & Roche, 2001) offers an alternative approach to examining sexual interest through the transformation of sexual functions. RFT's account of human language and cognition explains how humans come to respond to associations which they have not been explicitly taught. For example, if a child is taught the association between the physical object biscuit and the verbal utterance biscuit and is then taught that a biscuit is also a cookie, he/she will without further teaching understand that the verbal word cookie also relates to the physical object biscuit and vice-versa. From the perspective of relational frame theory when this occurs, the object biscuit and the two words, biscuit and cookie are said to exist within an equivalence relation (Roche & Barnes, 1997).

The emergence of stimulus equivalence using arbitrary stimuli in laboratory settings has also been observed. For the purpose of assessing sexual interest, using the

stimulus equivalence paradigm, sexual preferences are assessed by examining the transformation of arbitrary stimulus functions having been indirectly associated with the target stimulus through the equivalence relation. The transformation of functions may therefore provide a more implicit means of assessment than traditional methods. If for example stimuli A and B exist in an equivalence relation and a sexually arousing function is created in B, the formerly neutral function of A may be transformed in accordance with this relation, in that A gains a sexually arousing function. This was demonstrated by Rachman and Hodgson (1966) who reported the first laboratory induced fetish in a group of male volunteers. By pairing slides of nude females with slides of female boots, Rachman established a conditioned sexual response to the images of female boots alone. Further studies replicated these findings both with female boots and shoes (Rachman & Hodgson, 1968) and abstract stimuli such as red circles (McConaghy, 1970). The term "transformation" is generic to RFT as in the case of non-equivalence relations functions are not seen to typically transfer. For example, if A is opposite to B, then the sexually arousing function of B would not be expected to transfer to A. Instead, the function of A would be transformed in accordance with the opposite relation, such that it may reduce sexual arousal. From the perspective of assessing sexual interest a hypothetical RFT procedure might involve reinforcing appropriate choice discriminators that facilitate the emergence of two equivalence classes (i.e. A1-B1-C1 and A2-B2-C2) in which A1 and A2 represent sexually enticing images depicting females and males, respectively, B1 and B2 represent nonsense syllable and C1 and C2 represent artistic but arbitrary symbols. Testing the transformation of stimulus effects one would expect participants to indicate preference for the artistic

symbol that had participated in an equivalence relation with images consistent with their sexual preference. For example a heterosexual male would be expected to show preference for the symbol represented by C1 as opposed to C2. In addition to testing the transformation of stimulus functions RFT offers analysis of response latencies to appropriate matching of equivalences class members. In this hypothetical example longer latencies would be expected for males, when matching members from the female equivalence class (O'Sullivan, 2005).

Researchers suggest that relational-frame view of human sexual behaviour may shed light on how the violence of sexual assault acquires reinforcing sexual functions for some men.

According to Barnes & Roche (1997)

Although men in our culture are not explicitly reinforced for raping, they do, however, live in a social/verbal culture in which gentle, caring, and submissive women often participate in a frame of coordination with sexual attraction (e.g., a common theme in children's' fairy stories is the rescue of a beautiful damsel in distress by a knight in shining armor) . Men also participate in a social/verbal culture in which women often participate in frames of coordination with "not knowing their own minds," and "meaning 'yes' even when they say no. Thus, women may fall into a frame of coordination with "weakness" and "must be controlled for their own good," and into a frame of opposition with "strength" and "must be taken seriously. (p125).

The authors propose that conceptualizing behavior in this way may help in

understanding how deviant sexual behaviors such as rape can obtain sexually arousing stimulus functions in the absence of explicit reinforcement for the act of rape itself. This line of thinking is further supported by the use of RFT principles in the treatment of sexual and violent offenders. A traditional approach to rehabilitation therapy for sexual offenders is to alter their thinking. As a result challenging offenders existing frames of reference or relational networks and the transformation of functions in line with those has become of interest to researchers in the field of Acceptance and Commitment Therapy (Barnes & Roche, 1997).

Nonetheless, RFT faces the same ethical and legal problems regarding its stimuli as previous methods. Nonetheless, using sexually enticing images rather than words, offers an advantage in that the participants level of education and linguistic understanding does no function as an extraneous variable, as it does in the implicit association test . Recently, another procedure for assessing implicit cognitions has been proposed. The Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes, Barnes-Holmes, Power, Hayden, Milne, & Stewart, 2006) developed from Relational Frame Theory, is a latency-based response measure used to assess previously established relations between sample and target stimuli by presenting relational response options, such as “Similar” and “Opposite”, or “Better” and “Worse” on a computer-based task. Participants are instructed to respond as quickly and accurately as possible across trials which are considered relationally consistent or inconsistent with present beliefs. For instance, consistent trials may require participants to respond to pleasant stimuli as “pleasant” whereas inconsistent trails may require participants to respond to pleasant stimuli as “unpleasant”. The IRAP is based on the premise that shorter average

response latencies should be demonstrated for consistent relative to inconsistent trials. While the IRAP is still in its infancy it has received support (Barnes-Holmes et al, 2006) and is suggested to be more robust to faking than the Implicit Association Test even when participants are provided with direct instructions. Researchers have highlighted how cognitive distortions of sexual offenders are underpinned by a number of implicit cognitive processes called implicit theories (Ward, 2000). New assessment methods such as IRAP can provide further evidence for Wards implicit theory. Results from an IRAP study show how this method is effective at identifying core differences between sexual offenders against children and non offenders than a cognitive distortion Questionnaire. Both groups demonstrated an overall IRAP response bias towards adults as sexual and children as non sexual. “This bias was significantly impaired in the sexual offender group. It provided support for implicit theory hypothesis. It highlights the importance of developing implicit measurement techniques” (Dawson, Barnes-Holmes, Gresswell, Hart & Gore, 2009, p.2).

1.10.1 Information processing approaches. Information processing approaches to sexual arousal and interest attempt to model cognitive components associated with sexual interest and sexual deviance. Research in this area is built on the assumption that sexual arousal and interest, in addition to physiological and behavioural aspects, includes cognitive and affective components. Interest in cognitive attentional based models of sexual arousal/ interest initially developed from studies investigating the effects of distraction on male sexual arousal (Barlow, 1986 cited in Seto, 1992). (Laws & Rubin 1969) and (Henson & Rubin, 1971) demonstrated that when an individual was instructed to distract themselves with non sexual thoughts during a physiological

assessment of sexual arousal decreases in penile circumference or blood flow were observed. Since then much research has focused on the effects of anxiety and distraction (Elliott & O'Donohue, 1997) as well as positive and negative mood (Mitchell, Dibartolo, Brown, & Barlow, 1998) on sexual arousal. One of the noticeable achievements of such methods is their demonstration and connection of the motivational aspects of sexual interest and underlying cognitive processes. While information processing measures of sexual interest have strong face validity and are theoretically resilient to faking, currently there is very little published research on these techniques.

1.10.2 Choice reaction time. Choice reaction time (CRT, Wright & Adams, 1994), developed in response to the issue of transparency in viewing time measures, (which will be discussed below) is a non-intrusive procedure measuring the aesthetic aspects of sexual arousal. CRT is a normative measure and has broad support in the cognitive and neuropsychological literature. CRT is based on the premise that increased attention towards preferred sexual stimuli is thought to produce interference in a subjects' cognitive performance on a simple reaction task (Wright & Adams, 1999). Their reaction time profile is therefore thought to indicate sexual preference. It is proposed that this measure may be more resilient to faking due to the covert measuring of reaction time and the additional cognitive processing required for the choice reaction task. Traditionally, sexual preference studies using CRT instruct participants to indicate the position of a white dot superimposed on an image by pressing specified keys on a keyboard. (Wright & Adams 1994) in testing their hypothesis presented 80 university undergraduate and local community participants with 60 slides of commercially available images depicting preferred-sex nudes, non-preferred-sex nudes, and neutral

stimuli, whilst requiring them to complete a choice reaction time task. The task involved identifying the correct location of a marker which was superimposed onto each image, as quickly and accurately as possible. Markers were randomly located in one of five possible locations and participants were required to identify the location of the marker by pressing one of five key pad buttons corresponding with the marker positions. The authors found an interference effect on cognitive performance on the choice reaction time task for preferred-sex images. A significant increase in response latency was observed between non-preferred and preferred-sex images for each group (e.g., gay men, heterosexual men, lesbian women, and heterosexual women). In an attempt to replicated these findings using slides of clothed individuals in addition to images of nudes, Wright and Adams (1999) reported the pattern of results was the same for both but the effect was only significant for nude images with the CRT demonstrating 87.5% accuracy in differentiating between individuals with same and opposite-gender sexual orientation/preference using nude slides. The authors recommend the use of nude images to increase the probability of an effect in future research projects. (Giotakis, 2005) in a similar study using commercially available clothed images examined differences between sexual offenders (rapists, intra-familial and extra familial child molesters) and controls. The authors simplified the CRT task by reducing the number of choices to two possible white dot locations, in either the right or left corner. They found that groups convicted for sexual offences demonstrated significantly longer overall reaction times than the control group.

In the CRT task response latency is seen as a consequence of the ‘distracting’ image. The CRT may therefore prove advantageous over VT as the former appears to be

tapping a more involuntary orienting response rather than a prolonged attentional fixation response. There is, however, a paucity of published research evaluating CRT as an assessment of sexual preference, which has perhaps deterred its use in the clinical and forensic context. Furthermore, Wright and Adams recommendation to employ nude images leaves CRT open to the same ethical and legal problems as previous methods.

A similar task to that of CRT is the emotional Stroop which explores the extent to which an offender can ignore stimulus relating to his/her offence while trying to carry out a task. It is based on the assumption that offence related stimuli (e.g. words related to the offence) will contain particular resonance for the offender and hence inhibit task performance. Studies have found that adult sexual offenders against children show a greater attentional bias towards sexual words when compared to violent non sexual offenders and non offending controls (Price & Hanson, 2007; Smith & Waterman, 2004). This procedure is still in its infancy and while results support the Stroop's potential to tap into sexual interest and associations as yet group differences are not sufficient to establish its utility as a clinical tool (O'Ciarda & Gromley, 2008).

1.11 Conclusions on Current Forensic Assessment Techniques

Self reports carry with them a number of limitations the most compelling of which is offender mendacity. The ability of respondents to produce fake answers is well documented (Furnham & Henderson, 1982). Most researchers make use of social desirability or lie scales (e.g. Marlowe-Crowne Social Desirability Scale Short Form (Thompson & Phua, 2005)). There are claims that such scales can determine the extent to which a participant is susceptible to social desirability bias and therefore allow for statistical control of the response bias. Such scales may prove useful in population that

are not so highly motivated to dissimulate results, however the fact that offenders 'learn the language' cannot be ignored and it is therefore naive to think that "lie scales" deter self serving biases. Additionally, there is concern about the construct validity of self report measures. Both theory and research indicate that self report responses are a product of psychological, sociological, linguistic, experimental and contextual variables, which may not reflect the construct of interest (Lanyon & Goodstein, 1997). The advantages of self report measures are largely dependent on their reliability and validity. There is currently a lack of published data regarding the psychometric properties of self report measures for different sexual and violent offender populations. Finally, self report measures are impacted by the intellectual capacity of the offender, as those with lower levels of learning disability, may have difficulty understanding questions or grasping abstract concepts. Given the high prevalence of learning disabilities among offenders this is a cause for concern.

In an effort to overcome some of the difficulties and limitations involved in physiological and self report measures with Forensic populations, researchers have focused on implicit measures of sexual preference. The reason being is that it makes it difficult to influence response through conscious control. Implicit measurement is an umbrella term applied to various measurement methods that make it difficult to influence responses through conscious control. "Implicit measures can be defined as outcomes of measurement procedures that are caused in an automatic manner by psychological attributes'' (De Houwer, Teige Mocigemba, Spruyt, & Moors, 2009, p.347). They provide the opportunity to assess associations, attitudes and compulsions which may not be accessible through self report due to the offenders' lack of awareness

of such attitudes/beliefs (Ward, 2000) or their motivation to dissimulate responses (Marshall & Serran, 2000). Attentional methodologies can be classified into two groups: those related to viewing time, which are clearly overt in purpose and those related to information processing (IP) which are more covert (e.g. Choice Reaction Time (CRT; Giotakis, 2005; Wright & Adams, 1994, 1999); The Emotional Stroop (Price, 2006; Smith & Waterman, 2004) and Rapid Serial Visual Presentation (RSVP; Beech, Kalmus, Tipper, Baudouin, & Humphreys, 2006). Viewing time measures are based on the assumption that an individual will look longer at images they find attractive in comparison to neutral images or images they deem unattractive (Laws & Gress, 2004). Information processing methodologies attempt to discriminate the effect of increased attention towards the object of attraction by measuring relative impairment in simple tasks. The assumption underlying IP models is that performance will be impaired due to the increased attention the object receives. There have been a number of concerns raised recently (Borsboom, 2007) about the lack of psychometric sophistication among psychology practitioners.This project seeks to address this by exploring a sophisticated yet transparent measurement model to a raft of potentially extremely useful assessment techniquesIt also allows for accessing attitudes and associations not accessible through self report. This is due to the offender's lack of awareness of such attitudes (Ward 2000). Future development of sexual preference assessment methodologies necessitates the use of less intrusive methods in addition to less explicit and offensive experimental stimuli. Methods such as rapid serial visual presentation, relational frame theory and the implicit association test may therefore be a way forward in terms of providing a robust, less-fakable measure of sexual interest while simultaneously avoiding the issue of

volunteer bias by including more representative normative samples. However, further research is required before their utility with forensic populations can be established. Currently one of the main issues regarding the use of implicit measures within a forensic context centres on the lack of coherent measurement models underpinning the use of such measures. Commonly the measures adopted are ipsative in nature rendering normative comparisons inappropriate. While Glasglow et al. (2003) argue that the main value of such measures is in idiographic clinical contexts, Fischner (2000) claims that these measures do more harm than good in forensic assessments. Forensic assessment necessitates both an idiographic and a normative frame of reference. Although high risk individuals are identified on the basis of idiosyncratic features, forensic judgements and decisions are made in light of the individuals' position in relation to others and therefore require a clear comparative framework.

1.12 Rationale for Current Investigation

In light of what is mentioned above in relation to implicit measurement techniques, the current project aims to examine a psychometric model for collating implicit measurements (Hammond 2008) that allows for both an idiographic and normative application of scores. Current literature also highlights the need for implicit cognitive studies and suggests that they should be carried out to understand if child molesters hold offence supportive cognitions that support the committing of sexual offences (Gannon & Rose 2009). Some studies have also demonstrated how well implicit measures can predict sexual orientation. (Snowden, Withcter, & Gray 2008). Earlier research into sexual orientation has relied on self report measures, it is suggested that implicit measures can be utilized to measure a basic aspect of human identity

because of their ability to demonstrate sexual orientation perhaps further highlighting their advantages in clinical and forensic settings. Meta analytical evidence shows how deviant sexual interest in children is a risk factor for recidivism in child sex offenders. Nunes and Jung (2012) suggests that cognitive distortions are associated with greater minimization of guilt and deviance, victim harm, need for treatment, and responsibility. They propose that future research aimed at "increasing precision and clarity in measurement and conceptualization of cognitive constructs will facilitate better understanding of the role these cognitions play in sex offending and, consequently, better assessment and treatment" (p. 183). To overcome the problems with self report or phallometric measures there appears to be a need for additional empirical research into implicit measurement techniques.

1.13 Central Research Question

The central research question concerns the viability of latency-based implicit measures in Forensic Assessment. In order to be viable there needs to be a reasonable and applicable measurement model underpinning the use of these tasks. A psychometric model for collating implicit measurements that allows for both an idiographic and normative application of scores was developed by (Hammond, 2008). Model development is largely informed by Item Response Theory (IRT) (Van den Linden & Hambleton, 1998), in particular a generalization of the mathematical measurement theory espoused by Georg Rasch. Item Response Theory (IRT) is also sometimes called latent trait theory. This is a modern test theory (as opposed to classical test theory). IRT requires stronger assumptions than classical test theory. In IRT, the true score is defined on the latent trait of interest rather than on the test, as is the case in classical test theory.

IRT is popular because it provides a theoretical justification for doing work that classical test theory does not. Some applications where IRT is useful include: Item bias analysis (IRT) provides a test of item equivalence across groups.

1.14 Aims of Project and Contribution to Knowledge

The UCC Assessment battery designed by Hammond (2008) is inclusive of the following measures: Rapid Serial Visual Presentation (RSVP), the Implicit Association test (IAT), Viewing time (VT), the Towers of Hannoi (TOH), the Structured Clinical Interview for Disorders (SCID) and the Psychopathic Personality Inventory (PPI). For the purpose of this study the following measures were chosen for use amongst low risk and sex offending populations. The IAT, RSVP, VT and the SCID. All of the measures listed above had previously been tested in the prison setting. It was decided to omit the towers of Hannoi and the PPI for the following reasons. Given the limited time frame that a researcher is allowed with a prison sample, the PPI was too long a test to incorporate into a short time frame. There are 187 items on this explicit measure. In comparison RSVP, the IAT and the VT measures could be completed in a much shorter length of time. The TOH was also omitted from the test battery for the following reasons. This measure of impulsivity is a mathematical puzzle. It consists of three rods, and a number of disks of different sizes which can be moved. The objective is to move the entire stack to another rod by obeying simple rules. An example being that only one disk can be moved at a time. When initially tested amongst male prisoners, the following was noted. It appeared to cause frustration and competitiveness amongst the prisoners, particularly if two were participating in the research simultaneously. For this reason it was not included in the following study.

The central research question concerns the viability of latency based implicit measures in forensic assessment. Sexual and violent offending is an area of increasing concern in Ireland and recent government and Garda initiatives have highlighted the need for research on the causes, prevalence and management of such offenders. The initial response of the prison and probation services in Ireland has been to look to the UK for the programmes for offender treatment and assessment pioneered by the Prison Service there. However, for a long time there has been concern regarding the ineffective and psychometrical suspect use of self-report measures with deviant populations. Attempts have been made to encourage practitioners to use newly developed implicit tasks (Abel, 2001) .While they offer promise, there has been almost no psychometric evaluation of such devices and those evaluations that do exist are generally negative (Fisher, 2001). However, these negative findings are largely due to the fact that the psychometric models being applied are inappropriate, being based upon traditional Reliability Theory which is not consistent with the data collected. The proposed study seeks to robustly investigate the viability of implicit techniques. If found viable they will greatly enhance forensic assessment practice.

The first measure to be examined is the SCID (First, Spitzer, Gibbon, & Williams 1990). This explicit measure is a much older measure (than the implicit measures included), similar to measures such as the questionnaire assessments of sexual interest outlined in chapter one. While acknowledging that self reports such as the SCID are open to faking when administered to non compliant individuals there utility is too well documented when utilised amongst clinical and Forensic settings. It was hypothesised that differences on the subscales for personality disorders would emerge

between the low risk and forensic samples. In line with the documented prevalence of personality disorders particularly antisocial personality disorder, it was expected that significant difference would be found between the samples on this particular personality disorder scale.

Chapter 2: Explicit measurement: The Structured Clinical Interview for Disorders (SCID) amongst an Offender and Low Risk Sample

2.1 Introduction

The SCID was developed in 1985 and consists of 2 scales; the SCID-I which consists of a present mental state interview that gives a differential diagnosis for DSM-III-R Axis I disorders (i.e. mood and substance abuse disorders). It also comprises of the SCID-II which consists of a 109 item questionnaire covering the DSM-IV Personality Disorder categories. For the purpose of this study, the research version of the SCID 11 was utilised. Firstly, the reliability of the SCID in clinical populations shall be addressed. As this study was inclusive of forensic populations, the issues surrounding some of the functional links between personality disorders and offending behaviours shall be addressed.

2.2 Psychometric Properties of the SCID

The reliability of the SCID has been explored in both clinical and nonclinical populations (Messina, Wish, Hoffman, & Nemes, 2001; Ulrich, Deasy, & Smith, 2008). A study to examine the inter-rater reliability and internal consistency of the SCID -11 was carried out by Maffei et al. (1997). They found the measure had good inter rater and internal consistency reliability. The sample was inclusive of 231 in-and outpatients. Researchers reported inter-rater reliability coefficients that ranged from .48 to .98 for categorical diagnosis (Cohen k); dimensional judgements (intraclass correlation coefficient) of .90 to .98 and internal consistency coefficients were reported as

satisfactory (.71-.94). Several studies comparing the SCID-II to other measures of personality have been carried out. The SCID has been compared to the Million Clinical Multiaxial Inventory-II and the Personality Disorder Examination. (O'Boyle & Self, 1990, Oldham, Skodol, Kellman, Hyler, Rosnick, & Davies 1992; Renneberg, Chambless, Dowdall, Fauerbach, & Gracely, 1992). Researchers reported that such comparisons have shown quite poor agreement between the instruments, although they differentiate no conclusion about which instruments are more valid.

Segal, Hersen and Van Hasselt (1994) recommend two ways to test the reliability of the Structured Clinical Interview for Disorders. The first of these being the test- retest method, where a client is interviewed by two different clinicians on two different occasions, with both formulating an individual diagnosis. Findings here illustrate that although test-retest can focus on longer term reliability, researchers were unable to find reports that had intervals greater than two weeks. Segal et al. (1994) recommend a second method to test the reliability of the SCID. That is through a joint interview technique. In this case the interview is scored by at least two different raters who have made independent diagnosis. However, these researchers express concerns and pit falls in relation to the SCID and its implications for its application in clinical practice. Firstly, they note that a big concern in research on the reliability of the SCID is the extent to which some studies inspect the area of Clinical and practical utility. They draw attention to the fact that many studies in the area have been carried out in an artificial research context as opposed to being in an ongoing clinical setting and also to the fact that SCID interviewers are experienced clinical researchers and have an expert knowledge of the DSM criteria. They too however highlight the many positive aspects

of the SCID. It can be effectively administered and has the potential to facilitate diagnosis and treatment planning; it facilitates DSM based psychiatric diagnosis and it incorporates the major axis 1 and all axis 11 disorders (Segal et al., 1994).

Arntzs, Beijsterveldt, Hoeskstra, Hofman, Eussen, and Sallaerts (1992) gathered data on the interrater reliability of a Dutch version of the SCID -11. Researchers interviewed 70 outpatients before they began treatment by one rater, while a second rater observed. Both of the raters were asked to make independent ratings and the second rater was asked not to participate in the discussion. (Arntz et al., 1992) reported the following. On criterion level, the interrater reliabilities appear to be satisfactory, they noted a few exceptions but reported that most reliabilities were higher than 0.75.Agreement on personality disorder, on the whole, was excellent (overall kappa = 0.80). This finding fits with that of Neal, Fox, Caroll, Holden, and Barnes (1997) who note that the Kappa coefficient for joint interview reliability is 0.75.

In a more recent study Lobbestael, Leurgans, and Arntz (2011) explored the inter-rater reliability of the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders Axis I (SCID I) and Axis II disorders (SCID II). Their sample was inclusive of both inpatients and outpatients, and non patient controls. Audiotaped interviews were analysed by independent second raters blind for the first ratters' scores and diagnoses. (Lobbestael et al., 2011) reported that results showed moderate to excellent inter-rater agreement of the Axis 1 disorders, while most categorically and dimensionally measured personality disorders illustrated excellent interrater agreement. Germans, Van Heck , Masthoff , Trompenaars, and Hodiamont (2010) analysed 495 SCID-11 interviews that was inclusive of a sample of Dutch adult

Psychiatric Patients. They concluded that the set of SCID-II items can be advantageous as a personality disorder screen in a population of psychiatric outpatients.

As the study that follows explores the differences between offending populations and non offending populations on the SCID items it is necessary to firstly provide the DSM-V Criteria for personality disorders. Secondly, an exploration of the literature surrounding the link that may exist between personality disorders and offending behaviours is addressed.

2.3 Personality Disorders DSM –V

In the DSM-5 model, personality disorders are characterised by impairments in personality functioning and pathological personality traits. The specific personality disorder diagnoses that may be derived from this model include antisocial, avoidant, borderline, narcissistic, obsessive-compulsive, and schizotypal personality disorders. This approach also includes a diagnosis of personality disorder-trait specified (PD-TS) that can be made when a personality disorder is considered present but the criteria for a specific disorder are not met. The essential features of a personality disorder are:

A. Moderate or greater impairment in personality (self/interpersonal functioning).

B. One or more pathological personality traits.

C. The impairment in personality functioning and the individual's personality trait expression are relatively inflexible and pervasive across a broad range of personal and social situations.

D. The impairments in personality functioning and the individual's personality trait expression are relatively stable across time, with onsets that can be traced back to at least adolescence or early adulthood.

E. The impairment in personality functioning and the individual's personality trait expression are not better explained by another mental disorder.

F. The impairments in personality functioning and the individual's personality trait expression are not solely attributable to the physiological effects of a substance or another medical condition (e.g., severe head trauma).

G. The impairments in personality functioning and the individual's personality trait expressions are not better understood as normal for an individual's developmental stage or socio- cultural environment.

2.4 Antisocial Personality Disorder DSM-V

Typical features of antisocial personality disorder are a failure to conform to lawful and ethical behaviour, and an egocentric, callous lack of concern for others, accompanied by deceitfulness, irresponsibility, manipulativeness, and / or risk taking. Characteristic difficulties are apparent in identity, self-direction, empathy, and or intimacy, as described below, along with specific maladaptive traits in the domains of Antagonism and Disinhibition.The proposed diagnostic criteria are as follows:

A. Moderate or greater impairment in personality functioning, manifested by characteristic difficulties in two or more of the following areas:

1. Identity: Egocentrism; self-esteem derived from personal gain, power or pleasure.
2. Self direction: Goal setting based on personal gratification; absence of prosocial internal standards, associated with failure to conform to lawful or culturally normative ethical behaviour.

3. Empathy: Lack of concern for feelings, needs, or suffering of others; lack of remorse after hurting or mistreating another.
4. Intimacy: Incapacity for mutually intimate relationships, as exploitation is a primary means of relation to others, including by deceit and coercion; use of dominance or intimidation to control others.

B. Six or more of the following pathological personality traits:

1. Manipulativeness (an aspect of Antagonism): Frequent use of subterfuge to influence or control others; use of seduction, charm, glibness, or ingratiation to achieve one's ends.
2. Callousness (an aspect of Antagonism): Lack of concern for feelings or problems of others; lack of guilt or remorse about the negative or harmful effects of one's actions on others; aggression; sadism.
3. Deceitfulness (an aspect of Antagonism): Dishonesty and fraudulence; misrepresentation of self; embellishment or fabrication when relating events.
4. Hostility (an aspect of Antagonism): Persistent or frequent angry feelings; anger or irritability in response to minor slights and insults; mean, nasty, or vengeful behaviour.
5. Risk taking (an aspect of Disinhibition); Engagement in dangerous, risky, and potentially self-damaging activities, unnecessarily and without regard for consequences; boredom proneness and thoughtless initiation of activities to counter boredom; lack of concern for one's limitations and denial of the reality of personal danger.

6. Impulsivity (an aspect of Disinhibition); Acting on the spur of the moment in response to immediate stimuli; acting on a momentary basis without a plan or consideration of outcomes; difficulty establishing and following plans.

2.5 Avoidant Personality Disorder DSM-V

Typical features of avoidant personality disorder are avoidance of social situations and inhibition in interpersonal relationships related to feelings of ineptitude and inadequacy, anxious preoccupation with negative evaluation and rejection, and fears of ridicule or embarrassment. Characteristic difficulties are apparent in identity, self-direction, empathy, and/ or intimacy, as described below, along with specific maladaptive traits in the domains of Negative Affectivity and Detachment. The proposed diagnostic criteria are as follows:

A. Moderate or greater impairment in personality functioning, manifest by characteristic difficulties in two or more of the following areas:

1. Identity: Low self-esteem associated with self-appraisal as socially inept, personally unappealing, or inferior; excessive feelings of shame.
2. 2 Self- direction: Unrealistic standards for behaviour associated with reluctance to pursue goals, take personal risks, or engage in new activities involving interpersonal contact.
3. Empathy: Preoccupation with, and sensitivity to, criticism or rejection, associated with distorted interference of others' perspectives as negative.
4. Intimacy: Reluctance to get involved with people unless being certain of being liked; diminished mutually within intimate relationships because of fear of being shamed or ridiculed.

B. Three or more of the following four pathological personality traits, one of which must be (1) Anxiousness:

1. Anxiousness (an aspect of Negative Affectivity): Intense feelings of nervousness, tenseness, or panic, often in reaction to social situations; worry about the negative effects of past unpleasant experiences and future negative possibilities; feeling fearful, apprehensive, or threatened by uncertainty; fears of embarrassment.
2. Withdrawal (an aspect of Detachment): Reticence in social situations; avoidance of social contacts and activity; lack of initiation of social contact.
3. Anhedonia (an aspect of Detachment): Avoidance of close or romantic relationships, interpersonal attachments, and intimate sexual relationships..

2.6 Borderline Personality Disorder DSM-V

Typical features of borderline personality disorder are instability of self-image, personal goals, interpersonal relationships, and affects, accompanied by impulsivity, risk taking, and/or hostility. Characteristic difficulties are apparent in identity, self- direction, empathy, and/or intimacy, as described below, along with specific maladaptive traits in the domain of Negative Affectivity, and also Antagonism and/ or Disinhibition. The proposed diagnostic criteria are as follows:

A. Moderate or greater impairment in personality functioning, manifested by characteristic difficulties in two or more of the following four areas:

1. Identity: Markedly impoverished, poorly developed, or unstable self-image, often associated with excessive self-criticism; chronic feelings of emptiness; dissociative states under stress.

2. Self- direction: Instability in goals, aspirations, values, or career plans.
3. Empathy: Compromised ability to recognise the feelings and needs of others associated with interpersonal hypersensitivity (i.e., prone to feeling slighted or insulted); perceptions of others selectively biased towards negative attributes or vulnerabilities.
4. Intimacy: Intense, unstable, and conflicted close relationships, marked by mistrust, neediness, and anxious preoccupation with real or imagined abandonment; close relationships often viewed in extremes of idealization and devaluation and alternating between over involvement and withdrawal.

B. Four or more of the following seven pathological personality traits, at least one of which must be (5) Impulsivity, (6) Risk taking, or (7) Hostility:

1. Emotional lability (an aspect of Negative Affectivity): Unstable emotional experiences and frequent mood changes: emotions that are easily aroused, intense, and/or out of proportion to events and circumstances.
2. Anxiousness (an aspect of Negative Affectivity): Intense feelings of nervousness, tenseness, or panic, often in reaction to interpersonal stresses; worry about the negative effects of past unpleasant experiences and future negative possibilities; feeling fearful, apprehensive, or threatened by uncertainty; fears of falling apart or losing control.
3. Separation insecurity (as aspect of Negative Affectivity): Fears of rejection by and/or separation from- significant others, associated with fears of excessive dependency and complete loss of autonomy.

4. Depressivity (an aspect of Negative Affectivity): Frequent feelings of being down, miserable, and/or hopeless; difficulty recovering from such moods; pessimism about the future; pervasive shame; feelings of inferior self-worth; thoughts of suicidal behaviour.
5. Impulsivity (an aspect of Disinhibition): Acting on the spur of the moment in response to immediate stimuli; acting on a momentary basis without a plan or consideration of outcomes; difficulty establishing or following plans; a sense of urgency and self-harming behaviour under emotional distress.
6. Risk taking (an aspect of Disinhibition): Engagement in dangerously, risky, and potentially self-damaging activities, unnecessarily and without regard to consequences; lack of concern for one's limitations and denial of the reality of personal danger.
7. Hostility (an aspect of Antagonism): Persistent or frequent angry feelings; anger or irritability in response to minor slights and insults.

2.7 Narcissistic Personality Disorder DSM-V

Typical features of narcissistic personality disorder are variable and vulnerable self-esteem, with attempts at regulation through attention and approval seeking, and either overt or covert grandiosity. Characteristic difficulties are apparent in identity, self-direction, empathy, and/or intimacy, as described below, along with specific maladaptive traits in the domain of Antagonism. The proposed diagnostic criteria are as follows:

A. Moderate or greater impairment in personality functioning,

manifested by characteristic difficulties in two or more of the following four areas:

1. Identity: Excessive reference to others for self-definition and self-esteem regulation; exaggerated self-appraisal inflated or deflated, or vacillating between extremes; emotional regulation mirrors fluctuations in self-esteem.
2. Self-direction: Goal setting based on gaining approval from others; personal standards unreasonably high in order to see oneself as exceptional, or too low based on a sense of entitlement; often unaware of own motivations.
3. Empathy: Impaired ability to recognise or identify with the feelings and needs of others; excessively attuned to reactions of others, but only if perceived as relevant to self; over-or underestimates of own effects on others.
4. Intimacy: Relationships largely superficial and exist to serve self-esteem regulation; mutuality constrained by little genuine interest in others' experiences and pre dominance of a need for personal gain.

B. Both of the following pathological personality traits:

1. Grandiosity (an aspect of Antagonism): Feelings of entitlement, either overt or covert; self-centeredness; firmly holding to the belief that one is better than others; condescension towards others.
2. Attention seeking (an aspect of Antagonism); Excessive attempts to attract and be the focus of the attention of others; admiration seeking.

2.8 Obsessive-Compulsive Personality Disorder DSM-V

Typical features of obsessive- compulsive personality disorder are difficulties in establishing and sustaining close relationships associated with rigid perfectionism, inflexibility, and restricted emotional expression. Characteristic difficulties are apparent in identity, self-direction, empathy, and/or intimacy, as described below, along with specific maladaptive traits in the domains of Negative Affectivity and/or Detachment. The proposed diagnostic criteria are as follows:

A. Moderate or greater impairment in personality functioning, manifested by characteristic difficulties in two or more of the following four areas:

1. Identity: Sense of self derived predominantly from work or productivity; constricted experience and expression of strong emotions.
2. Self- direction: Difficulty completing tasks and realizing goals, associated with rigid and unreasonably high and inflexible internal standards of behaviour; overly conscientious and moralistic attitudes.
3. Empathy: Difficulty understanding and appreciating the ideas, feelings, or behaviours of others.
4. Intimacy: Relationships seen as secondary to work and productivity; rigidity and stubbornness negatively affect relationships with others.

B. Three or more of the following four pathological personality traits, one of which must be (1) Rigid perfectionism:

1. Rigid perfectionism (an aspect of extreme Conscientiousness (the opposite pole of Detachment): Rigid insistence on everything being flawless, perfect, and without errors or faults, including one's own and others' performance; sacrificing of timeliness to ensure correctness in every detail; believing that there is only one right way to do things; difficulty changing ideas and/or viewpoint; preoccupation with details, organisation, and order.
2. Perseveration (an aspect of negative Affectivity): Persistence at tasks long after the behaviour has ceased to be functional or effective; continuance of the same behaviour despite repeated failures.
3. Intimacy avoidance (an aspect of Detachment): Avoidance of close or romantic relationships, interpersonal attachments, and intimate sexual relationships.
4. Restricted affectivity (an aspect of Detachment): Little reaction to emotionally arousing situations; constricted emotional experience and expression; indifference or coldness.

2.9 Schizotypal Personality Disorder DSM-V

Typical features of schizotypal personality disorder are impairments in the capacity for social and close relationships and eccentricities in cognition, perception, and behaviour that are associated with distorted self-image and incoherent personal goals and accompanied by suspiciousness and restricted emotional expression. Characteristic difficulties are apparent in identity, self-direction, empathy, and /or

intimacy, along with specific maladaptive traits in the domains of psychoticism and detachment. The proposed diagnostic criteria are as follows:

A. Moderate or greater impairment in personality functioning, manifested by characteristic difficulties in two or more of the following four areas:

1. Identity: Confused boundaries between self and others; distorted self-concept; emotional expression often not congruent with context or internal experience.
2. Self- direction: Unrealistic or incoherent goals; no clear set of internal standards.
3. Empathy: Pronounced difficulty understanding impact of own behaviours on others; frequent misinterpretations of others' motivations and behaviours.
4. Intimacy: Marked impairments in developing close relationships; associated with mistrust and anxiety.

B. Four or more of the following six pathological personality traits:

1. Cognitive and perceptual dysregulation (an aspect of Psychoticism): Odd or unusual thought processes; vague, circumstantial, metaphorical, over elaborate, or stereotyped thought or speech; odd sensations in various sensory modalities.
2. Unusual beliefs and experiences (an aspect of Psychotocism): Thought content and views of reality that are viewed by others as bizarre or idiosyncratic; unusual experiences of reality.

3. Eccentricity: (an aspect of Psychoticism): Odd, unusual, or bizarre behaviour or appearance; saying unusual or inappropriate things.
4. Restricted affectivity (as aspect of Detachment): Little reaction to emotionally arousing situations; constricted emotional experience and expression; indifference or coldness.
5. Withdrawal (an aspect of Detachment): Preference for being alone to being with others; reticence in social situations; avoidance of social contacts and activity; lack of initiation of social contact.

2.10 Is there a link between personality disorders and offending behaviours?

Research is indicative of the fact in the past antisocial personality disorder was linked to criminal behaviour. However researchers are suggesting that what is needed in an exploration of the functional links between personality disorder and offending behaviours (Roberts & Coid, 2010). The frequency of personality disorders in the prison population is common compared to the general population (Anderson, 2004; Brink, 2005). This is particularly true for antisocial personality Disorder**.** Fazel and Danesh (2002) found that from 62 surveys carried out across 12 countries and inclusive of over 23,000 inmates; they found 47% of the sample presented with Antisocial Personality Disorder. They too suggest from their study that inmates are about 10 times more likely to have Antisocial Personality Disorders than are the general population. Other researchers too report that the prevalence of APD is just slightly less than 50% (Hart and Hart 1989, Singleton 1998). Blackburn and Coid (1999), in a study conducted in the United Kingdom, found that 62% of 164 inmates who were violent males met the criteria for Antisocial Personality Disorder. Singleton, Meltzer, and Gatward (1979)

found that 56% of 2371 inmates met the criteria for APD. The literature indicates that personality disorders are common in Irish prison inmates. Researchers suggest a great overlap between the diagnostic category ‘antisocial personality disorder’ and criminal behaviour in general. Kennedy et al. (2003) note that it is without doubt that studies such as these point to the frequency of antisocial personality disorders in correctional facilities.

With cluster C disorders, Roberts and Coid (2010) found that avoidant personality disorder scores were associated with criminal damage. These researchers found that obsessive–compulsive personality disorder scores were associated with criminal offences and dependent personality disorder scores were significantly associated with violence but negatively associated with criminal damage offences. Johnson (2000) noted that those with passive aggressive and paranoid personality disorders showed an association with increased risk for violence and criminal conduct. Five et al. (1997) documented that depressed patients are significantly more hostile than normal controls. Modestin, Hug, and Ammann (1997) also propose that individuals with some forms of affective disorders may be a risk for criminal behaviours. Similarly, Ryan, Richard, and Hall (2009) propose that it is common for people who are diagnosed as having paedophilia to also experience another major psychiatric disorder and a personality disorder at some time in their life.

Raymond, Coleman, Ohlerking, and Christenson (1999) administered the SCID interview to a sample of 40 convicted pedophiles. They noted that personality disorders were common in these participants (i.e., obsessive-compulsive, antisocial, avoidant, narcissistic and paranoid personality disorders). They report how lack of progress in

treatment is often attributed to poor motivation, inattentiveness, resistance, and denial. In light of the findings presented here, it seems likely that unrecognized psychiatric conditions contribute to the difficulties that offenders face when they try to engage in the process of therapy. These findings hence call for taking co morbid disorders into consideration when individualizing treatment within sex offender treatment programs (Raymond et al., 1999).

Warren and South (2009) looked at the relationship between cluster B personality disorders only and patterns of criminality and violence in a sample of offenders incarcerated in a maximum secure prison. They found no relationship between antisocial, borderline, histrionic or narcissistic personality disorder scores and history of convictions apart from a negative relationship between antisocial personality disorder scores and homicide and a positive relationship between borderline personality disorder scores. However, antisocial, borderline and narcissistic scores all showed a strong relationship with causing threats and physical assaults in the prison setting. In addition researchers noted that borderline and histrionic scores were associated with perpetrating sexual assaults in prisons. Narcissistic and antisocial scores were linked to institutional violence.

Black et al. (2004) using the Structured Clinical Interview found Borderline Personality Disorder amongst 30% of their sample of 65 inmates. They note overall that these offenders had a high suicide risk score and found links amongst this sample to other personality disorders such as Antisocial Personality Disorder and also to Attention Deficit Hyperactivity Disorder. They suggested also a greater risk of recidivism amongst these offenders and advice that early intervention and treatment of Bored reline

Personality Disorder in prisons is of paramount importance. Black et al. (2010) also note that antisocial personality disorder was present in 113 out of a sample of 320 newly incarcerated offenders. Researchers noted that offenders with ASPD also had a higher rate of suicide, a higher rate of mood, anxiety, substance use, psychotic, somatoform disorders, borderline personality disorder and ADHD.

Researchers support the impression of higher rates of BPD in prison populations than in community samples. Borderline personality is associated with longstanding impulsivity and affective instability, including rage reactions (Sansone & Sansone, 2009).

Francia and White (2010) examined personality disorders and their features in two groups of incarcerated male sexual offenders in Colorado, USA. Their sample was inclusive of 251 rapists and 311 child molesters and compared them with a group of nonsexual offenders. They found that rapists had significantly higher levels of antisocial personality traits than child molesters. Nonsexual offenders also scored higher on the antisocial scale than child molesters. They found that the greatest prevalence for nonsexual offenders was for obsessive compulsive, antisocial, avoidant and narcissistic personality disorders. For sexual offenders they noted that avoidant personality disorder had the highest prevalence followed by obsessive compulsive, schizoid, paranoid and borderline personality disorders (Francia et al., 2010).Eher, Rettenberger, and Schilling (2010) in a sample of over eight hundred sexual offenders admitted to Austria's prisons between 2002 and 2009 found that sexual offenders displayed high rates of mental illness, sexual disorders, personality disorders and substance abuse. Studies such as highlight treatment implications, as they suggest that child molesters may benefit from

treatment aimed at sexual disorders and cluster C traits. Rice, Marnie, Quinsey, Vernon, and Harris (1994) found, in a study amongst 136 extrafamilial child molesters, that 50 of this group had participated in behavioural treatment to alter inappropriate sexual age preferences. 31% of the sex offenders were convicted of a new sex offense, 43% committed a violent or sexual offense, and 58% were arrested for some offense or returned to the institution. The authors concluded that of those convicted "of a new sex offense had previously committed more sex offenses, had been admitted to correctional centres and were more likely than others to have been diagnosed with a personality disorder" (Rice et al., 1994, p.437).

Existing literature points to the fact that amongst forensic populations those who meet the criteria for Antisocial Personality Disorder are at a higher risk of suicide, show higher rates of mood and anxiety disorders, substance use, somatic disorders, poor quality of life and show higher rates of recidivism. Interesting the literature too points to an overlap between antisocial personality disorder and Borderline personality Disorder. Black, Blum, Pfohl, and Hale (2004) found that in a sample of 84 offenders, 44% with Antisocial Personality Disorder also met the criteria for Borderline Personality Disorder and also to meet the criteria for major depression. In Prisons those with Antisocial Personality Disorders can present with considerable management problems due to irritability, lack of remorse and disregard for other people. The literature suggests that this fact should lead to innovative treatment of Antisocial Personality Disorders in the Prison settings. Also those offenders with Antisocial Personality Disorder are more likely to experience poorer mental health and social functioning thus leading to increased suicide rates and a greater need to access mental health services (Black,

Gunter, Allen Loveless, & Sieleni, 2010).

The relationship between personality disorder and violent re-offending is too well documented and the presence of personality disorder has been included as a risk factor in structured risk assessment tools (Davison & Janca, 2012). A good knowledge of the nature of the link between personality disorder and offending has important implications for treatment and risk management. The literature is suggesting that not only it is important to understand personality disorders in forensic populations in the context of treatment and risk but also in understanding what specific personality disorders are linked to offending behaviours. The studies above show that some personality disorders other than antisocial are related to particular types of offending behaviour. The studies also demonstrate that, although rates of personality disorder are high in all serious offenders, the role played by personality disorder may be greater in some offences such as sexual offences (Davidson & Janca, 2012). In conclusion, it is of paramount importance that personality disorder within the Forensic setting is understood for the following reasons. As the studies above illustrate those with personality disorder may be at higher risk of suicide. Management and treatment issues may be problematic in offenders with personality disorder. The literature too highlights that there may be a link between personality disorders in some categories of offenders and rates of recidivism.

2.11 Aims and objectives

The overall aim of utilising the Research Version of the Structured Clinical Interview is to explore how it performs as an explicit self report measure within a Forensic Setting. Its reliability and usage amongst clinical populations is well

established. It was expected that differences would emerge on the different subscales for personality disorder on the test amongst the low risk, nonsexual offenders and child sexual offender groups.

2.12 Method

2.12.1 Participants. A total of 52 completed the SCID (see Table 1). The age range was 19-73 years. (SD= 14.195). The low risk participants were all college students recruited through poster invitation in the School of Applied Psychology University College Cork. The offender population was recruited through poster advertisement placed by Governors in Irish Prisons. As with the other studies no details or background information on prisoners was disclosed to the researcher.

Table 1: Participants in the SCID

Samples	N=52
Low Risk	21 (13 Male, 8 Female)
Non Sexual Offenders	19 (Male)
Child Sexual Offenders	12 (Male)

2.12.2 Materials. Materials were the Structured Clinical Interview for Disorders (research version) Presented via laptop and a consent form (see Appendix A).

2.12.3 Design. The SCID ran on a programme that was developed by Dr. Sean Hammond (University College Cork) using Borland Delphi 5 Enterprise. All data was recorded in a form, compatible for import to PASW Statistics for data analysis.

2.12.4 Procedure. On selecting the SCID icon, the participant is directed to the type of question, displayed below. The participant is informed that this assessment

involves reading 109 statements, presented individually on screen, while indicating how well each statement describes them, using a 3 point likert scale (1= not at all, 2=perhaps a little, 3=very much). (See Appendix E). Participants were informed that they may take as long as they like to complete this task. Participants are also advised that if any statement is unclear or difficult to interpret, they should call the researcher.

As can be seen from Figure 1 the statement is presented in the centre of the screen, beneath which there are three response options. Participants are required to read the statement, asking themselves how well this statement describes them. Next participants are required to choose a response, by selecting same with the mouse, from one of the following options –not at all, perhaps a little or very much.

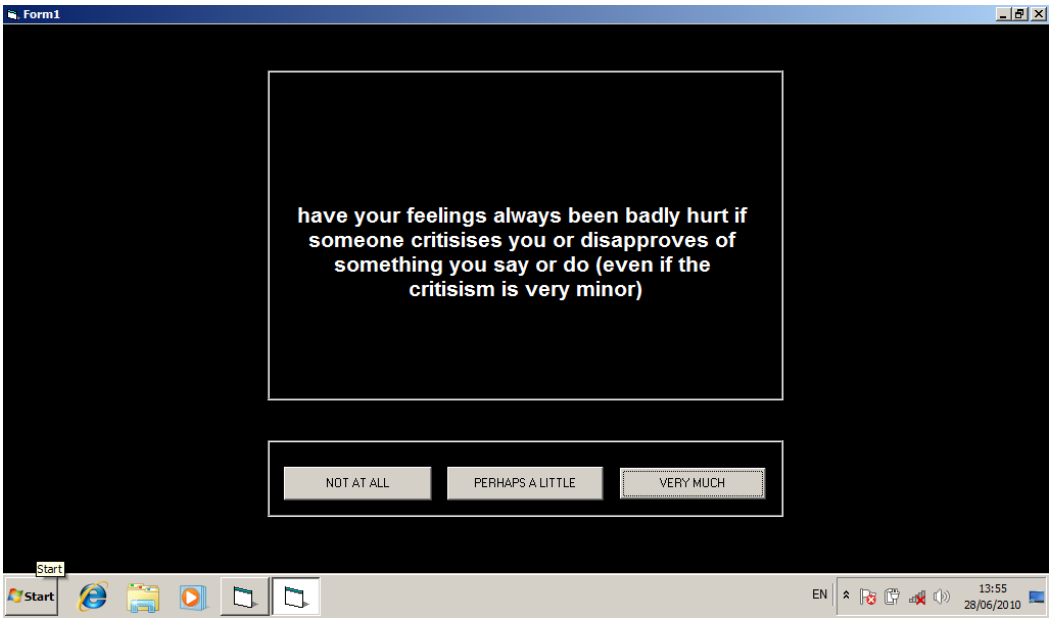

Figure 1: Sample Item from the SCID

Once the participant has made their response selection, the second statement/question is displayed on the screen. This procedure is repeated for all 109 questions. On completion of the task, the participant is taken back to the main index

page of the UCC assessment system.

2.12.5 Ethical Considerations. Both low risk participants and the offender populations that participated were fully informed of the nature of the assessment tasks prior to participating and ethical considerations were of upmost importance throughout. The following points were explained to each participant. Participation was voluntary and one had the right to refuse to participate and withdraw from the study at any time. It was explained that all data was kept strictly confidential and that no identifying information would be tied to responses therefore participants would remain anonymous. It was further explained that under no circumstances would any reference be made to individuals in oral or written reports that could link them to this study. Before participating on the task, the participant was asked to read the consent form (see Appendix A) and given the opportunity to ask any additional questions. Before participating it was again stressed that all information was treated confidentially and that the information would be used for research purposes.

2.13 Results

Hypothesis: Based on the literature and the fact that this explicit measure has shown its utility amongst clinical samples, it was hypothesised that differences would emerge on the subscales for the personality disorder criteria amongst the sexual offender, nonsexual offenders and low risk sample. Due to the common prevalence of APD amongst forensic samples, it was expected that differences would emerge in particular between the groups on this sub scale for personality disorder criteria.

The reliability of the structured clinical interview for disorders was tested and is presented in Table 2.

Table 2: Reliability of the Scales on the SCID

Personality Disorder	Cronbachs Alpha	Mean	Standard Deviation	Model Fit
Avoidant	.693	5.44	2.886	0.138
Dependent	.827	4.9	3.65	0.299
Obsessive Compulsive	.768	6.15	3.92	0.286
Passive Aggressive	.753	6.00	3.57	0.261
Depressive	.749	5.40	3.18	0.377
Paranoid	.838	5.33	3.78	0.419
Schizotypal	.809	8.19	4.49	0.374
Histrionic	.852	5.37	4.602	0.440
Narcissistic	.761	3.44	3.134	0.415
Borderline	.892	4.96	4.757	0.398
Antisocial	.953	7.58	8.930	0.617

Cronbachs alpha was highest for the antisocial scale and it also had the best model fit (α =.953, model fit=0.617) and lowest on the Avoidant scale (α =.693, model fit=0.138). The reliability of the other scales were as follows: Dependent scale (α =.827,model fit=0.299), obsessive compulsive scale (α =.768, model fit=0.286), passive Aggressive scale (α =.753,model fit=0.261), Depressive scale (α =.749,model fit=0.377), Paranoid (α =.838,model fit=0.419), Schizotypal scale (α =.809,model fit=0.374), Histrionic scale (α =.852,model fit=0.440), Narcissistic Scale (α =.761=0.415) and Borderline Scale (α =.892,model fit=0.398) .

Table 3 shows the Model Fit. The overall factor fit was weak and the overall fit was weak. Results were as follows. Overall Orthogonal Fit (0.3119), the Overall Pattern Fit (0.426) and the overall structure fit (0.1912).

Table 3: Model Fit SCID

Overall Orthogonal Fit	0.3119
Overall Pattern Fit	0.4626
Overall Structure Fit	0.1912

The Multiple group factor analysis is presented in Table 4. Of the categories of DSM personality disorders, Avoidant, Schizotypal, Obsessive Compulsive, Passive Aggressive and Narcissistic Personality loaded well on the first factor. Depressive personality loaded well on the second factor and on the third category the following factors, Antisocial, Histrionic and Borderline Personality Disorder load well.

Independent sample Kruskal-Wallis Tests were used to explore if any differences were to emerge across the different groups (sex offenders, low risk sample and the nonsexual offenders) on the subscales. A kruskal- Wallis Test revealed no significant difference across the groups on Avoidant personality disorder. (X_2 =.151, df=2, p=.151). There was no significant difference found between the groups on dependent personality (X_2 =5.139, df=2, p=.077), no significant difference on obsessive compulsive disorder (X_2 =.2.640,df=2, p=.267), no significant difference on passive aggressive disorder (X_2 =2.809,df=2,p=.246), no significant difference on schizotypal personality disorder (X_2 =5.179,df=2,p=.075). No significant difference across the groups was found on histrionic personality disorder (X_2 =4.438, df=2, p=.109) and no significant difference on narcissistic personality disorder (X_2 =2.098, df=2, p=.350). All asymptotic significances are reported at the .05 significance level.

Table 4: Multiple Group Factor Analysis

	Factor		
	1 Personality	**2 Negative affect**	**3 Volatile**
Avoidant	1.019	-.074	-.169
Schizotypal	.966	-.194	.091
Obsessive Compulsive	.725	.117	.000
Passive Aggressive	.675	.246	.018
Narcissistic	.494	.242	.101
Histrionic	.346	.161	.302
Paranoid	.334	.312	.205
Depressive	-.125	1.157	-.100
Antisocial	-.118	-.104	1.152
Borderline	.305	.279	.372
Dependent	.258	.275	.277

There was however significant differences found between the sexual offenders, the low risk sample and the general offending population on the following sub scales. They are as follows: Depressive Personality Disorder, Paranoid Personality Disorder, Borderline Personality Disorder and Antisocial Personality Disorder.

2.13.1 Depressive Personality Disorder. A Kruscal- Wallis Test revealed a significant difference across the groups on Depressive Personality Disorder (Dep PD) (X_2 =6.643, df=2, p=.036) (see Table 120). The Child Sexual offenders and the Non Sexual Offenders had the higher median (Md=6) than the low risk group with a recorded median value (Md=4). The Non Sexual Offenders had the highest mean rank (32.16), the mean rank for the child sexual offenders was (28.63) and for the low risk sample (20.17). The mean ranks for Depressive Personality Disorder and the groups are displayed in the table below.

Table 5: Independent Sample Kruskal Wallis Test (Dep PD)

	Groups	N	Mean Ranks
Depressive Personality Disorder	Low Risk	21	20.17
	Non Sexual Offenders	19	32.16
	Child Sexual Offenders	12	28.63

Based on this finding, this subscale was further examined using the Mann-Whitney u test to see where the differences lie. It showed the following. There was a significant difference between the low risk and child sexual offenders on this sub-scale (U=71.500, N_1=21,N_2=12,p=.040 two-tailed). The mean rank for child sexual offenders was (21.45) and for low risk offenders (14.40). There was no significant difference found between the low risk sample and the non-sexual offenders. (U=138.000, N_1=21,N_2=19,p=.099). There was no significant difference found between the Child Sexual Offenders and the Non Sexual Offenders (U= N_1=12,N_2=19,p=.535).

2.13.2 Paranoid Personality Disorder. A Kruskal- Wallis test revealed a significant difference across the groups on the sub scale for Paranoid Personality Disorder (PPD) criteria (X_2 =.041, df=2, p=.041) (see Table 6).

Table 6: Independent Sample Kruskal Wallis (PPD Criteria)

	Groups	N	Mean Ranks
Paranoid Personality Disorder	Low Risk	21	20.29
	Non Sexual Offenders	19	29.29
	Child Sexual Offenders	12	32.96

Based on this finding, this subscale was further examined using the Mann-Whitney u test to see where the differences lie. It showed the following. There was a significant difference between the low risk and child sexual offenders on this sub-scale (U=71.500, N_1=21, N2=12, p=.040 two-tailed). The mean rank for child sexual

offenders was (21.45) and for low risk offenders (14.40). There was no significant difference found between the low risk sample and the non-sexual offenders. (U=138.000, N_1=21,N_2=19,p=.099). There was no significant difference found between the Child Sexual Offenders and the Non Sexual Offenders (U= N_1=12, N_2=19,p=.535).

2.13.3 Borderline Personality Disorder. A Kruskal- Wallis test revealed a significant difference between the three groups on the sub scale of Borderline Personality Disorder (BPD) criteria (X_2 =7.564, df=2, p=.023) (see Table 7). The Non Sexual Offenders recorded the highest median value (Md=6.00), Child Sexual Offenders (5.00) and the low risk sample (Md=1.00). A Mann- Whitney U test revealed the following differences. There was no significant difference found between the low risk sample and the Child Sexual Offenders (U=84.000, N1=21, N2=12, p=.122 two-tailed). There was however a significant difference found between the low risk sample and the Nonsexual offenders (U=97.000, N_1=21, N2=19, p=.005 two-tailed). The Non Sexual offenders had the highest rank (25.89) and the low risk sample (15.62). There was no significant difference found between the Nonsexual Offenders and the Child Sexual Offenders (U=109.000, N_1=19, N2=12, p=.857 two-tailed).

Table 7: Independent Sample Kruskal-Wallis Test (BPD Criteria)

	Groups	N	Mean Ranks
Borderline Personality Disorder	Low Risk	21	19.62
	Non Sexual Offenders	19	32.16
	Child Sexual Offenders	12	29.58

2.13.4 Antisocial Personality Disorder. A Kruskal- Wallis test revealed a significant difference between the groups on the sub- scale for Antisocial Personality

Disorder (APD) criteria (X_2 =17.314, df=2, p<.0005) (see Table 8). The highest median was found amongst the Non Sexual Offenders (Md=11.00), Child Sexual Offenders (Md=6.500) and the low Risk Sample (Md =.000).

Table 8: Independent Sample Kruskal-Wallis Test (APD Criteria)

	Groups	N	Mean Ranks
Antisocial Personality Disorder	Low Risk	21	16.05
	Non Sexual Offenders	19	33.24
	Child Sexual Offenders	12	34.13

A Mann- Whitney U Test showed the following differences. There was a significant difference found between the Child Sexual Offenders and the Low risk Sample (U=37.500, N1=12, N2=21, p<.0005two-tailed). The Child Sexual Offenders had the highest mean rank (24.38) and the low risk sample (12.79). There was a significant difference between the low risk sample and the Non Sexual Offenders (U=68.500, N1=21, N2=19, p<.0005two-tailed). The Non Sexual Offenders had the highest mean rank (27.39) and the low risk sample (14.26). There was no significant difference found between the Nonsexual Offenders and the Child Sexual Offenders (U=111.000, N1=19, N2=12, p=.921 two-tailed).

2.13.5 Considerations and the findings. A consideration taken into account based on the above findings is as follows. There are multiple comparisons being performed. The Holm-Bonferroni method was applied as it is a means to counteract the problem of multiple comparisons. Table 9 shows the ordering of the p-values obtained (from the lowest to the highest p- value).

Table 9: Ordering of the P Values (Highest to Lowest)

Source	P- Values
Antisocial Personality	0
Depressive Personality	0.036
Paranoid Personality	0.041
Scizotypal Personality	0.075
Dependent Personality	0.077
Histrionic Personality	0.109
Avoidant Personality	0.251
Borderline Personality	0.23
Passive Aggressive Personality	0.246
Obsessive Compulsive Personality	0.267
Paranoid Personality	0.35

M= the number of comparisons made and K= the current p-value level. They are as follows. K=1, 0.036,K=2, 0.041,K=3, 0.075, K=4,0.077, K=5, 0.109,K=6,0.251,K=7,0.23,K=8,0.246,K=9,0.267, K=10,0.35,K=11,0. The cut- off for the test is 0.05. All of the observed p-values were compared to the adjusted cut –off until one was found which was no longer significant. The adjustment is as follows = 0.05 (the original cut-off). The New cut-off = $\alpha/(m+1-k)$. Table 10 shows the adjusted cut-off points.

Table 10: Adjusted Cut-off Points

0.004545
0.005
0.005556
0.00625
0.007143
0.008333
0.01
0.0125
0.016667
0.025
0.05

Based on this, only the first p-value (of 0.00) is less than the adjusted cut-off, therefore, only the comparison which had this p-value is actually significant. This is number 11 – the distribution of Antisocial Personality Disorder. Based on this finding, the categories were further examined with a Mann-Whitney U test to where the differences lie. In whatever correction that was chosen there was a significant difference between group 1 (Low Risk Sample) and groups 2 (Non Sexual Offenders) and 3 (Sex Offenders), but not between groups 2 (Non Sexual Offenders) and 3 (Sex Offenders) on the Antisocial Personality Disorder subscale.

2.14 Discussion

The hypothesis outlined above was supported. Differences emerged between the groups on the subscale for depressive personality disorder. The child sexual offenders and the non sexual offenders had the higher medians than the low risk group. There was a difference noted between the groups on paranoid personality disorder. There was a significant difference between the low risk and child sexual offenders on this sub-scale. The child sexual offenders had higher mean ranks than the low risk sample. The nonsexual offenders had higher mean ranks than the low risk sample on borderline personality disorder. There were significant differences also found between the groups on the subscale for antisocial personality disorder. The child sexual offenders and the nonsexual offenders had higher mean ranks than the low risk sample. After the Holm-Bonferroni method was applied as a means to counteract the problem of multiple comparisons being made, it was still noted that there was a significant difference between the low risk and child sexual offenders and between the low risk and non sexual offenders on the subscale for antisocial personality disorder.

The reliability of the SCID was carried out and showed the following. Cronbachs alpha was highest for the antisocial scale and it also had the best model fit (α =.953, model fit=0.617) and lowest on the Avoidant scale (α =.693, model fit=0.138). Kruskal- Wallis Tests revealed no significant difference across the groups on Avoidant personality, dependent, obsessive compulsive, passive aggressive schizotypal, histrionic or narcissistic personality disorder criteria. There was however, significant differences found between the sexual offenders, the low risk sample and the general offending population on the following sub scales. Depressive Personality Disorder, Paranoid personality disorder, Borderline Personality Disorder and Antisocial Personality Disorder.

There was a significant difference across the groups on depressive personality Disorder Scale. The Child Sexual offenders and the Non Sexual Offenders had higher recorded medians than the low risk group. Post- Hoc tests showed that there was a significant difference between the low risk and the Child Sexual Offender Groups. The mean rank was higher for child sexual offenders than for the low risk sample. There were no differences found between the low risk sample and the Non Sexual Offenders or between the Child Sexual Offenders and the Non Sexual Offenders. Two points need to be considered here. Firstly one may question if there are possible artefacts of necessarily finding depression in any event within a prison environment. Kashani et al. (1980) suggest that separation from families, the stress of being detained and the inability to act out while in confinement are possible reasons for depression amongst incarcerated individuals. Ng et al. (2009) note how offenders in juvenile prison environments were found to receive more counseling and rated staff in the prisons as higher. The point

being highlighted here was that inferior services and poor environmental conditions for prisoners may trigger or worsen depression in offenders. Kennedy (2006) in an Irish study conducted in the central mental hospital documented that 54% of newly committed prisoners had a psychotic illness with a previous history of psychotic illness. The researcher also noted that 73% reported with a history of harmful use or dependency on either alcohol or drugs on committal to prison, highlighting how combined substance abuse and mental illness is common.

Secondly research is indicative of the point that it is common for people who are diagnosed as having pedophilia to also experience another major psychiatric disorder anxiety disorder in and/or a personality disorder at some time in their life (Ryan, Richard, & Hall, 2009). Raymond, Coleman, Ohlerking and Christenson (1999) who used the SCID interview on a sample of 40 convicted pedophiles noted that personality disorders were common in these participants (i.e., obsessive-compulsive, antisocial, avoidant, narcissistic and paranoid personality disorders. It is an important to note that unrecognized psychiatric conditions may contribute to the difficulties that individuals face when they try to engage in therapy. The literature indicates how taking co morbid disorders into consideration when individualizing treatment within sex offender treatment programs is of great importance (Raymond et al., 1999). Another issue of concern here is that depressed patients are significantly more hostile than normal controls (Five et al., 1997). Modestin, Hug, and Ammann (1997) too propose that offenders with some forms of affective disorders may be a risk for criminal behaviors.

There were differences noted between the three groups on the subscale for paranoid personality disorder criteria. Post- hoc tests showed that there was a significant

difference between the low risk and child sexual offenders on this sub-scale. Here also the mean ranks were higher for the child sexual offenders than for the low risk group. There was no significant difference found between the low risk sample and the non-sexual offenders. There was no significant difference found between the Child Sexual Offenders and the Non Sexual Offenders. This finding is of interest particularly in light of research that suggests that paranoid ideation is common amongst prisoners. Raymond, Coleman, Ohlerking and Christenson (1999) who administered the SCID interview to convicted pedophiles noted that personality disorders such as paranoid personality disorders were common in these participants. They too propose that that unrecognized psychiatric conditions contribute to the difficulties that these offenders face when in treatment. Here again, such findings would suggest the consideration of co morbid disorders when individualizing treatment within sex offenders (Raymond et al., 1999).

There was a significant difference between the three groups on the sub scale of borderline personality disorder. Post-hoc tests showed that there was no significant difference found between the low risk sample and the Child Sexual Offenders. There was however a significant difference found between the low risk sample and the Nonsexual offenders. The Nonsexual Offenders had a higher rank than did the low risk sample. There was no significant difference found between the Non Sexual Offenders and the Child Sexual Offenders. Black et al (2007) who using the Structured Clinical Interview found Borderline Personality Disorder amongst 30% of their sample of 65 inmates (convicted for general offences). They note overall that these offenders had a high suicide risk risk and found links amongst this sample to other personality disorders

such as Antisocial Personality Disorder and also to Attention Deficit Hyperactivity Disorder. They suggested also a greater risk of recidivism amongst these offenders and advice that early intervention and treatment of Bored reline Personality Disorder in prisons is of paramount importance. Researchers too acknowledge the higher rates of BPD in prison populations than in community samples. Sansone and Sansone (2009) note how borderline personality is associated with longstanding impulsivity and affective instability, including violent outburst and aggression. Given this link, clinicians in both mental health and prison settings need to be aware of the possibilities of such histories in individuals with Borderline Personality Disorder.

There were differences on the sub scale for antisocial personality disorder across the groups. There was a significant difference found between the Child Sexual Offenders and the Low risk (the child sexual offenders had higher mean ranks than did the low risk group) and a significant difference between the low risk sample and the Non Sexual Offenders. (The non sexual offenders had higher mean ranks than did the low risk sample). There was no significant difference found between the Non Sexual Offenders and the Child). These findings were expected in light of the literature on Antisocial Personality Disorder and offending populations. Faze and Danish (2002) reported that from 62 surveys carried out across 12 countries and inclusive of over 23,000 inmates, they found 47% of the sample presented with Antisocial Personality Disorder. They too suggest from their study that inmates are about 10 times more likely to have Antisocial Personality Disorders than are the general population. Other researchers too report that the prevalence of APD in Prisons (Hart & Hart, 1989; Singleton, 1998). Blackburn and Coid (1999) reported than in a study conducted in the

United Kingdom, they found that 62% of 164 inmates who were violent males met the criteria for Antisocial Personality Disorder. Singleton, Meltzer, and Gatward (1979) found that 56% of 2371 inmates met the criteria for APD. The literature indicates that personality disorders are very common in Irish prison inmates and researchers suggest a great overlap between the diagnostic category 'antisocial personality disorder' and criminal behaviour in general (Kennedy et al., 2003). Existing literature points to the fact that amongst forensic population those who meet the criteria for Antisocial Personality Disorder are at a higher risk of suicide, show higher rates of mood and anxiety disorders, substance use, somatic disorders, poor quality of life and show higher rates of recidivism. Interesting the literature too points to an overlap between antisocial personality disorder and Borderline personality Disorder. Black, Blum, Pfohl, and Hale (2004) found that in a sample of 84 offenders, 44% with Antisocial Personality Disorder also met the criteria for Borderline Personality Disorder and also to meet the criteria for major depression.

In conclusion the following considerations are important. One would be hesitant to generalise from these results to the population as a whole for each group. These results though should indicate the path for further research in this area. However, with samples of 21, 19 and 12 for groups (low Risk, Non Sexual Offenders and Sexual Offenders respectively), it is not necessarily possible to discount the idea that the samples may not be representative of the populations they are attempting to replicate. It is recommended that a much larger sample size, particularly with sexual offenders be accessed in order to fully explore the utility of such an explicit measure amongst forensic samples for the following reasons. As the aforementioned studies suggest the

link between understanding personality disorder and offending has important implications for treatment and risk management. The literature is too suggesting that not only it is important to understand personality disorders in forensic populations in the context of treatment and risk but also in understanding what specific personality disorders are linked to offending behaviours. There is now much evidence that personality disorder is related to offending. The studies above show that some personality disorders other than antisocial are related to particular types of offending behaviour. The studies also demonstrate that, although rates of personality disorder are high in all serious offenders, the role played by personality disorder may be greater in some offences than others (Davidson & Janca, 2012). Finally, those with personality disorder may be at higher risk of suicide, and management and treatment issues may be problematic in offenders with personality disorder. The literature too highlights that there may be a link between personality disorders in some categories of offenders and rates of recidivism.

In contracts to the explicit measure presented above, the next section shall address the utility of an implicit measure, that of viewing time. The rationale behind this measure is that participants will take longer to respond to and view images that they may find sexually attractive. Based on the hypothesis that viewing time may reflect sexual interest, the following is expected. Males and females should view pictures and images of young adults of the opposite sex longest. Males should look at images of pububescent females longer than females look at pubescent males. Child sexual offenders are expected to view child images and pubescent images from both sexes the longest. (E.g. Harris et al., 1996)Those who commit rape offences against women

should view images of females the longest (e.g.Giotakos, 2006). Secondly based on the hypothesis that unobtrusively measured viewing time reflects sexual interest, it is predicted that viewing times should correlate with ratings of sexual attractiveness (e.g. Quinsey & Ketsetzis, 1996).

Chapter 3: The Utility of the Viewing Time Measure amongst a Low Risk and Sexual Offender Sample

3.1 Introduction

Phallometric testing has been described as a good scientific method as a measure of male sexual interest (Harris, Rice, Quinsey, & Chaplin 1996). Phallometric methods also have the ability to discriminate child molesters from other men (Harris, Rice, Quinsey, Chaplin, & Earls 1992). Despite these advantages, viewing time has been described as a valuable method to unobtrusively measure male sexual interest. (Harris et al., 1996). During the viewing time procedure, a participant is presented with a series of pictures of males and females of various ages. Pictures may show the individual fully clothed, partially clothed or nude in which the person may or may not erotically pose. There is an assumption that some pictures may have sexual value for an individual. "The rationale underlying the test is that clients will look longer at pictures they find sexually attractive and that a summary profile of their viewing times will show this attractiveness/unattractiveness differential"(Laws & Gress, 2004, p. 184).

There is a wide variety of viewing time methods, all ultimately based on the same premise. Many of the VT methods have been designed and modified to specifically investigate paedophilic interest in child molesters**.** There are two commercially available viewing time procedures. The AASI (Abel Assessment for Sexual Interest) (Abel, Huffman, Warberg, & Holland, 1998; Abel, Lawry, Karlstrom, Osborne, & Gillespie, 1994). (Abel screening INC 2004), (Abel et al., 2001) and secondly the AFFINITY (Glasgow, Osborne & Croxen 2003). The Abel Assessment for Sexual interest combines the measurement of viewing time with a detailed questionnaire

to assess sexual interest. The AASI is considered to be an effective and cost-efficient means of measuring sexual interest (Abel et al., 1998) that is readily applicable to both male and female participants. It has significant advantages over Plethysmography assessments as it is relatively unobtrusive (Harris et al., 1996); and Abel et al. (1998) notes that it bypasses the necessity for the use of nude images. However this may be problematic. In the viewing time task of the AASI participants are shown a series of images, each depicting a person of a specific gender, age, and ethnic background. The participant is required to rate each image on a seven-point likert scale ranging from 'highly sexually disgusting' to 'highly sexually arousing'. The participants self-report sexual arousal rating and the length of time taken to rate each image is surreptitiously recorded. Although the primary variable of interest is viewing time recording participants' subjective ratings of sexual interest allows for a comparison of both providing information concerning the client's level of insight. The second phase of the AASI requires participants to complete a questionnaire including items concerning sexual behaviours, personal interests, cognitive distortions and information related to social desirability (Abel, et al., 2001).

In a sample of paedophilic males (Mokros et al., 2012) found that ratings and viewing times for images of young children and prejuvenile children were higher in child molesters than were a control male sample and male nonsexual offenders. They note how paedophilic participants needed longer reaction times or make more errors in response tasks that involved child stimuli. According to these authors, the interpretation of the viewing time assessment of paedophilic individual

> ...would share a distinctive automatic processing bias for child

> related stimuli that would lead to prolonged response times in the presence of such stimuli. The notion of an automatic bias would follow from the conceptualisation of sexual arousal reaction proposed by Singer 1984. (Mokros et al., 2012, p. 232).

These researchers also note on exploration of the Affinity Viewing time procedure, that processing of child related stimuli or pictures is altered in paedophilic men and that this bias may be used for diagnostic purposes in clinical and forensic settings.

Some of the amount of time male adolescent child molesters view slides of children was significantly longer than other groups. Some researchers have examined the validity of the AASI (Abel et al., 2004), and support it as a valid measure of sexual interest in adolescent male child molesters. They also note that viewing time of slides of children for male's adolescent child molesters was correlated significantly with their number of victims and number of times they carried out acts of child molestation (Abel et al., 2004). One of the advantages of this measure is that it includes information from the following sources. Individual's subjective rating of sexual interest, visual reaction time to sexual stimuli and responses to sex offender specific questions. Questions arise surrounding the ability to fake responses on the viewing time measure.

While VT measures may provide a valid means to assess deviant sexual interest in children, faking may be a problem on this measure. The EISIP (explicit, implicit sexual interest profile) acknowledges this. The reliability and validity of the EISIP was investigated using samples of child sexual offenders, offenders and controls. (Banse,

Schmidt & Clarbour 2010). Researchers noted that amongst the indirect measures on the scale the viewing time measure showed higher reliability and convergent and criterion validity that measures such as the implicit association test.

The second procedure, Affinity (Glasgow, Osborne, & Croxen, 2003), was developed for the assessment of pedophilic sexual interest in persons with learning disabilities. Affinity is a computer-based procedure that requires participants to rank and then rate non-pornographic images while viewing time is covertly measured. As affinity measures interest and not arousal, it avoids the use of explicit images. Glasgow et al. (2003), in a pilot investigation, reported success with the learning disabled as well as normal subjects. This procedure is still in its infancy and more research is needed before its clinical utility can be established. Initial investigations (e.g. Abel, 1998; Abel, Huffman, Warberg, & Holland, 1998) suggested that the AASI possesses relatively high levels of sensitivity and specificity comparable to those of penile plethysmography. Results of studies with a sample of admitting adult child molesters (Abel, Huffman, Warberg, & Holland, 1998) and a sample of admitting adolescent child molesters (Abel et al., 2004) indicate that the sensitivity of the AASI is comparable to that of Plethysmography. Harris et al. (1996) also found significant between-group discrimination in that the proportion of overall viewing time to child images relative to adult images was significantly greater for child molesters than for normal controls.

Kalmus and Beech (2005) noted that studies using explicit stimulus sets to combine phallometry with measurements of viewing time, found viewing time to correlate well with measurements of sexual arousal and produced strong test-retest reliabilities (e.g. Abel et al., 1998; Harris et al., 1996). However, Quinsey, Rice, Harris

and Reid (1993) noted that sexually non-explicit material is less effective at predicting sexual preference as it elicits limited variability between groups. The viewing time paradigm is therefore impacted by similar ethical and legal problems as plethysmography in relation to its use of explicit images.

According to Gray (2000), as cited by Thornton & Laws (2006) who reviewed over 200 cases, the AASI identified 79% of pedophiles, correctly classifying 96% once the dissimulators were removed from the analysis. Significantly, the AASI's ability to identify pedophiles dropped to 36% among the group identified to be dissimulators. Questions have also been raised regarding the appropriateness and limitations of the AASI's use of ipsative scores which does not readily permit normative comparisons (Fischer, 2000; Fischer & Smith, 1999). The AASI is a commercial product, exclusively marketed by Abel Screening, with scoring and data interpretation controlled by the authors. The scoring algorithm is proprietary and has not been made available for independent empirical evaluation thus fuelling concerns regarding the validity of the test (Fischer & Smith, 1999; Lanyon, 2001). Establishing the reliability and validity of viewing time methodologies is also significantly hampered due to the dearth of published findings involving these measures (Laws & Gress, 2004). As the AASI only includes still images, it is limited to the assessment of preferences to sexual target characteristics such as age, gender and race. Representing preferences to certain behaviours, such as violent rape, is therefore currently not possible with the AASI. In order for the AASI to be established as a reliable and valid clinical tool, independent evaluations are necessary.

Studies have been carried out to investigate if there is a relationship between

sexual interest viewing time method and sexual arousal utilizing the PPG. (Gray & Plaud, 2005). This study included a clinical sample of sexual offenders diagnosed with pedophilic interests (39 participants). Participants underwent both penile plethysmography and the Abel assessment for sexual interest procedures. Results indicated that the AASI and the PPG are able to identify diagnosed pedophiles to a high degree. The PPG classified 64% of participants as true positives. The ASSI classified 79% of the participants in the study as true positives. Results of the study are also supportive of both the PPG and AASI for sexual interest. The researchers highlight the importance of analyzing AASI graph data in order to determine whether the person being evaluated meets the criteria considered a reflexive responder or dissimulator (Gray & Plaud, 2005). They suggest that the technique used for labelling a participant a reflexive responder had...

> ... very significant implications for the ability of the AASI and the PPG to classify correctly true positives...Researchers suggest that those who work with populations of sexual offenders that include pedophiles, re evaluate their Abel protocols in terms of the potential for dissimulation before they utilize potentially dissimulated protocols in their diagnostic work or in future research. (p. 57)

The following provides some accounts of early research on viewing time and also more contemporary research on viewing time as a predictor of sexual preference. It has been noted that viewing time increases with degree of sexually explicit content and when people were alone as opposed to in the presence of others (Ware, Brown, Amorsa,

Pilkey, & Presusse, 1972). It is apparent from this study that as content becomes more explicit viewing time increases. Participants were asked to control buttons on slide projector. (Each slide was viewed for as long as participants wished, with viewing time being recorded). The mean ratings and looking time for slides was recorded. Means for ratings were based on a seven point scale with the high end given; the looking time was scored in seconds. The following is an example of viewing time recorded. Slide of a dressed couple entering a room (Looking Time) LT =11.8, Male stimulating female genitals and breasts LT=18.9 and Cunnilingus LT = 20.2

Research to date has also noted that people with different degrees of sex guilt displayed different patterns of Viewing Time as the explicitness of the images increased (Love, Sloan, & Schmidt, 1976). This was measured using Moshers forced choice guilt Inventory. (Viewing time was recorded when people rated photographic slides of varying erotic content). Child molesters showed a restricted flat pattern of viewing time across age categories reminiscent (similar to) participants with high sex guilt and of normal's viewing their non preferred objects. It has also been noted that heterosexual males and females demonstrated a clear pattern of increased viewing time to adult sexual objects with decreasing attention across age and non preferred objects. Quinsey, Ketzetis, Earls and Karamanoukian (1996) hypothesized that males and females should view slides of young adults of the opposite sex longest and adults of the opposite sex longest and adults of the same sex and prepubescent children the shortest. They note also that there should be a correlation between viewing time and sexual attractiveness (and that ratings should be higher amongst males than females. Males should look at slides of pubescent females longer than females look at slides of pubescent males and

that males should look longer at adult females than females look at adult males (Quinsey et al., 1996).

More recent research also demonstrates how viewing time appears to be an adequate method of measuring categorical sexual interest but a poor measure of within category sexual interest (Israel & Strasberg, 2009). These researchers assessed viewing as a measure of sexual interest in self identified heterosexual men and women. Participants rated the sexual appeal of sexually provocative photos, within viewing time being unobtrusively measured. The following was highlighted from this study. Men and women viewed opposite sex pictures significantly longer than same sex pictures. Men viewed opposite sex pictures significantly longer than did women. Women viewed same sex pictures significantly longer than did men. Also noted in this study was the fact that ratings of sexual appeal and viewing time were uncorrelated for either men or women when viewing opposite sex pictures.

Conclusions drawn were that men's sexual interest is more strongly category specific than is the sexual interest of women (Israel & Strasberg, 2009). Others have too noted that women have a much less category-specific pattern of visual attention to erotic stimuli than do men. Jones (2012) noted that when simultaneously presented with male and female erotic stimuli, heterosexual women focus much more evenly to both male and female erotic stimuli than do heterosexual men, who focus almost exclusively to female stimuli. Richard, Patterson & Malerich (2010) too suggest that men's sexual attractions tend to be more category specific than women's—that is, men tend to be attracted to either women or men, in contrast women are more likely to show some amount of attraction to both sexes. These authors carried out a study inclusive of a

sample of 62 heterosexual men and 79 heterosexual women. The viewing time and attractiveness ratings provided to photographs of male and female “swimsuit models” was examined. In line with their proposed hypothesis, researchers found that men were more attracted to female than male models and spent more time viewing these images. In contrast, it was found that women were sexually attracted to both female and male models

One possible explanation here for females being more balanced and males are more category specific when exploring sexual interest may be as follows. It may perhaps be due to the fact that females view other females in terms of “competition”. In a content analysis regarding appearance amongst males and females (Joseph, 1985) found that women place much more importance on the physical attractiveness and appeal of members of their own sex in a way that is not seen in males. This researcher too notes that women compete among themselves in relation to attractiveness and look to identify faults with especially attractive women, because attractive women might pose a threat to another woman’s self image. This analysis too demonstrated that a massive concern for the women in this study was who is more attractive and issues pertaining to how a woman may become more attractive. In contrast to this the researcher noted that content analysis of all responses provided by the males in the study, showed no concern in relation to appearance attractiveness, or the physical features of their same sex counterparts. This study highlighted that males very often take issue with another male for looking at another man, in contrast to this woman look at other women to find faults as well as to make comparisons of themselves with other females.

This research also demonstrates the advantages of viewing time technique over

the Plethsmograph for the following reasons. It is less vulnerable to conscious manipulation and it is an indirect and unobtrusive measure of sexual interest. It was also suggested that people are more willing to volunteer for sex research when able to avoid use of genital Plethysmograph as an objective measure of sexual interest. Others also highlight the advantages of viewing time. Schmidt, Banse, and Clarbour (2008) suggest how viewing time can conquer problems related to other measures such as the PPG. In a study which included convicted child molesters, non sex offenders and non offenders who completed both implicit association tests and viewing time measures, the following was found. IATS showed moderate success in discriminating child sex offenders from controls. However they suggest that viewing time measures provides an absolute measure of sexual interest and are empirically a very good indirect measure of a child molester's sexual preference (Schmidt, Banse, & Clarbour, 2008). It is evident that viewing time shows considerable promise as an unobtrusive measure of sexual interest.

Rullo, Strassberg, and Israel (2010) examined viewing time as a measure of sexual interest (participants included gay men and lesbians). Participants were asked to rate the sexual appeal of sexually provocative pictures while the amount of time spent viewing each picture was inconspicuously measured. As the researchers had hypothesized the same sex individuals showed category specific patterns of sexual interest. That is to say that gay men and lesbians firstly viewed preferred sex pictures (that is of the same sex significantly longer than non preferred sex pictures (that is opposite sex pictures). Researchers secondly noted the following in relation to the viewing time task. Participants preferred sex pictures as significantly more sexually attractive than non preferred sex pictures.

Giotakos (2006) designed a study to examine the interference effects of sexual interest on viewing reaction time and cognitive functioning in a group of sexual offenders. The sample included 31 rapists, 27 child molesters, 53 control males and 24 control females. The test was computerized and participants completed the viewing reaction time task whilst being distracted with pictures of semi nude males and females of various ages and other stimuli. Participants were then instructed to attempt to recall whether or not the photograph had been presented during the first stage of the experiment or if the pictures were novel. Findings were as follows: viewing reaction time, in combination with incidental learning tasks, can serve as an unobtrusive measure of male's sexual interest. Results also indicated the following: extra familial child molesters had their longest viewing times with photographs of girls. Intra familial child molesters and control women, viewed pictures of adolescent females the longest. The rapists and control males viewed significantly longer the photos of women. Based on the hypothesis that viewing time may reflect sexual interest, the measure was utilised amongst a low risk sample, rapists and child sexual offenders.

3.2 Aims and Objectives

Based on the hypothesis that viewing time may reflect sexual interest, the following is expected based on Simon's (1979) Evolutionary Theory of mate preferences:

1. Males and females view pictures and images of young adults of the opposite sex longest.
2. Males should look at images of pububescent females longer than females look at pubescent males.

3. It is too expected that child sexual offenders will view child images and pubescent images from both sexes the longest. (e.g.Harris et al., 1996)

4. Those who commit rape offences against women, should view images of females the longer than adult male images (e.g.Giotakos, 2006)

5. Based on the hypothesis that unobtrusively measured viewing time reflects sexual interest, it is predicted that viewing times should correlate with ratings of sexual attractiveness (e.g. Quinsey & Ketsetzis, 1996).

3.3 Method

3.3.1 Participants. A total of 124 individuals participated in the viewing time task. Numbers participating from each group are presented in the table below. The age range was 18- 73 years (SD = 12.831). The low risk participants were mainly students that were recruited through poster invitation in the School of Applied Psychology University College Cork and through advertisement in a local newspaper. The offender population was recruited through poster invitation circulated by Prison Governors in a number of Irish Prisons.* It is relevant to note here that of the participating nonsexual offender group, their crimes were not disclosed to the researcher. It is possible that a number of these men may also have had convictions for sexual offences. It was envisaged that a number of female offenders would have participated. This unfortunately was not permitted by the Irish Prison Service. They advised in particular that female sexual offenders were not permitted to participate in the studies. Of the sexual offending population the only information available was that they had committed the crime of rape or child sexual offences. No other background information on these offenders was made available. It was not possible to ascertain the gender of the victim of

the perpetrators. Such information would have been useful in the overall analysis when considering refining the sub- types of sexual offenders. For example in the context of those who committed sexual crimes against children and exploring if these offenders were sexual aggressors of male or female children.

Table 11: Participants in the Viewing Time Measure

Group	Number of Participants
Low Risk Population	68 (31 Males and 37 Females)
Child Sexual Offenders	12 Males
Rapists	7 Males
Nonsexual Offenders	37 Males

3.3.2 Materials.

3.3.2.1 The stimulus images. The stimulus images for the viewing time measure were provided by (Hammond 2008). This stimulus set was originally used in research and assessment in the Clinical decision making support unit of Broadmoor Hospital. This stimulus set has previously demonstrated its utility in sexual preference assessment and has been used in the risk appraisal of violent and sexual offenders in the UK. It was therefore considered an appropriate alternative to a computer generated image set. There were 60 images presented to participants in total, inclusive of two trial images. The images presented to the participants covered five age categories inclusive of males and females. (Children, pubescent, young adults, adults and old people). A sample of the images can be found in Figures 2, 3 and 4.

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building high-performance and compact applications for Windows. Individual Delphi Project files were created for each of the images in the assessment.

3.3.4 Procedure. On opening the UCC Assessment System the participant is asked to provide a unique code. This code could be in numerical or alphabetical form, or a mixture of both. On selecting the Viewing Time icon the participant is directed to the window shown in Figure 5. The participant is informed that the task involves looking at clothed images of males and females from various age ranges (i.e. child, adolescent, adult and elderly). Participants are informed that they may take as long as they like to complete this task.

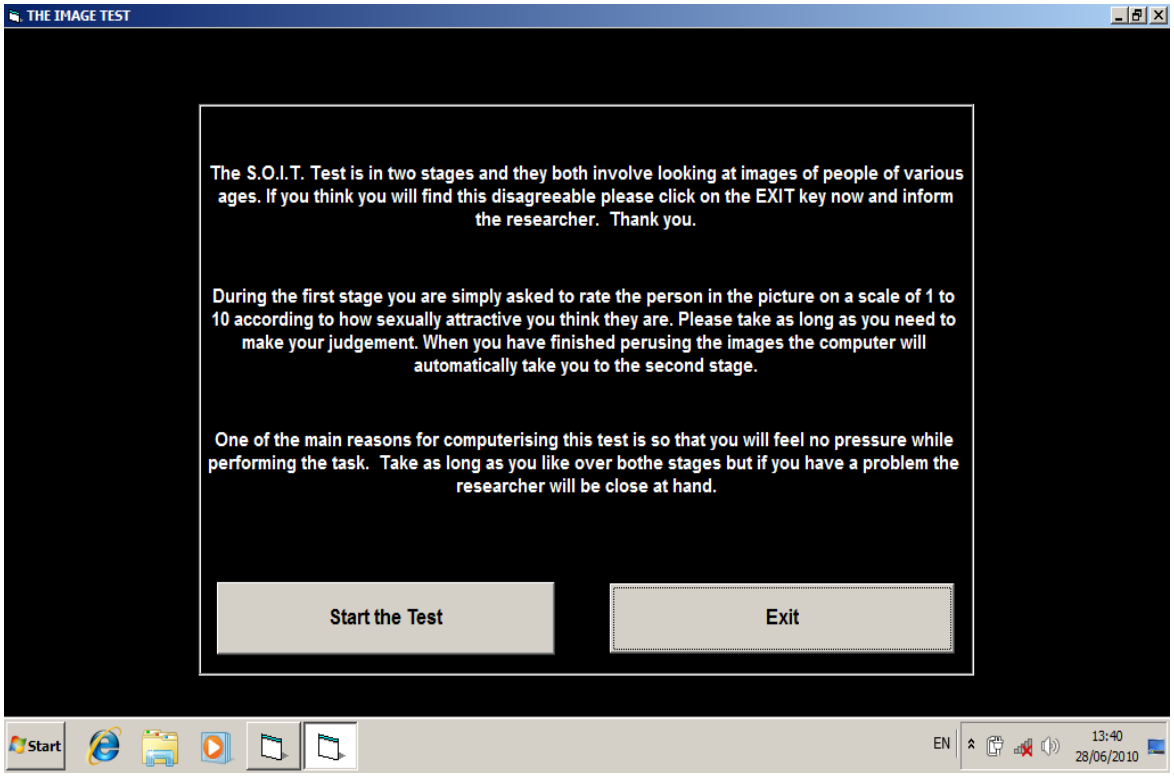

Figure 5: Instructions for the Viewing Time Measure

The task involves viewing 60 clothed images of males and females. The participant is required to rate each image in terms of sexual attractiveness ("How

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subjective ratings of sexual interest allows for a comparison of both which will be beneficial in providing information concerning an individual's level of insight, particularly in forensic populations.

All data was recorded in a form, compatible for import to PASW Statistics for data analysis.

3.3.5 Ethical Considerations. Before data collection took place ethical approval for this study was obtained from The School of Applied Psychology University College Cork and from the Ethics Board of the Irish Prison Service. Both low risk participants and the offender populations that participated were fully informed of the nature of the assessment tasks prior to participating and ethical considerations were of upmost importance throughout. The following points were explained to each participant. Participation was voluntary and one had the right to refuse to participate and withdraw from the study at any time. It was explained that all data was kept strictly confidential and that no identifying information would be tied to responses therefore participants would remain anonymous. It was further explained that under no circumstances would any reference be made to individuals in oral or written reports that could link them to this study. Before participating on the task, the participant was asked to read the consent form (See appendices A) and given the opportunity to ask any additional questions. Before participating it was again stressed that all information was treated confidentially and that the information would be used for research purposes. Any additional ethical guidelines as set out by the Irish Prison service when interacting with offenders was respected and adhered to. (For example, complete assurance from the researcher that no offenders would be identified in the research and that all data be destroyed after a period

of 6 months). On completion of the task, participants were thanked for their cooperation and again given the opportunity to ask any additional questions.

3.4 Results

It was hypothesized that males and females would spend longer viewing images of adults, young adults and pubescent images of the opposite sex .It was expected that child sexual offenders would view child and pubescent images for longer than adult images and that those who commit rape would view images for female adults for longer than adult males images. Finally based on the hypothesis that unobtrusively measured viewing time reflects sexual interest, it is predicted that viewing time should correlate with ratings of sexual attractiveness. For example it was expected that there should be a correlation between the amount of time a child sexual offender takes to look at images of children and the attractiveness rating given to these images. It was expected that viewing time should correlate with ratings of sexual attractiveness ratings for the rapists sample on image blocks of adult females.

3.4.1 Viewing Time (Response Time). In the viewing time task of interest for analysis was the time to respond to each of the categories of images, the time to move on (viewing time of each of the images) and finally the attractiveness rating that was given by respondents to the images. * Please note that for the viewing time task all data was log transformed (See Appendix B). As the data was skewed this allowed to check if parametric tests could be carried out. As the main effects and interaction effects of analysis of variance were mainly the same before and after the transformation, it was decided to include results from before the transformation in this results section. (In minor instances where differences emerged, the reader will be directed to Appendix B).

Table 12: Blocks of Images Presented- Viewing Time Task

Child Images (male and female)
Pubescent Images (male and female)
Young Adult Images (male and female)
Adult Images (male and female)
Old Adult Images (male and female)

To explore the time taken to respond to images, an ANOVA was carried out. Between subjects effects were the groups (low risk population, child sexual offenders, rapists and nonsexual offenders) and the sex of the participants (males and females). The within subjects effects were the gender of the image (males and females) and the age of the image (children, pubescent, young adults, adults and old adults). The main effects and interaction effects that were examined are listed in Table 13.

Table 13: Effects and Interaction Effects- Viewing Time Task

List of Interactions
Group
Gender of the participant
Gender of the image
Age of the image
Group x gender of the Image
Group x age of the Image
Gender of the image x age of the Image
Group x age of the Image
Group x gender of the image x age of the image
Group x gender of the image x age of the image

Table 14: Main Effects (within subjects) - Response Time to Images

Source	**Type 111 Sum of squares**	**df**	**Mean Square**	**F**	**Sig**	**Partial Eta Squared**
Image Gender	79.173	1	79.173	10.574	.001*	.082
Image Age	23.651	4	5.913	2.134	.076	.018

*p>.05

As can be seen from Table 14, the gender of the image had a significant main

effect (f=10.574, p=.001), there was no main effect for the age of the image (f=2.134, p=.076).

As can be seen from Table 15, only one of the two ways interactions were significant, the gender of the image x sex of the participant (f=9.319, p=.003). The image age x the group interaction was not significant (f=1.267, p=.235), the interaction between the image gender x group was also not significant (f=.823, p=.484).

Table 15: Two-way Interaction Response to Times

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Image Age x Group	42.134	12	3.511	1.267	.235	.031
Image Gender x Group	18.487	3	6.162	.823	.484	.020
Gender of Image x Sex of participant	69.777	1	69.777	9.319	.003*	.073
Age of the Image x Sex of participant	3.932	4	.983	.355	.841	.003
Gender of Image x Age of Image	12.810	4	3.203	1.262	.284	.010

*P<.05

Similarly the interactions between the age of the image x sex of the participant (f=.355, p=.841) and the gender of the image x age of the image (f=1.262, p=.284) were also non significant. Three- way interactions were also examined as outlined in Table 16.

Table 16: Three-way Interaction Response Time to Images

Source	Time 111 Squared	df	Mean Squared	F	Sig	Partial Eta Squared
Gender of Image x Image Age x Group	46.751	12	3.896	1.535	.108	.033
Gender Image x Image Age x sex	45.382	4	11.345	4.470	.001	.036

*P<.05

As can been seen from Table 16 above, the interaction between the gender of the image x age of the image x group was not significant (f=1.535, p=.108). The interaction between the gender of the image x age of the image x sex of the participant was significant (f=4.470, p=.001).

Tests of between subjects as seen in Table 17, showed that the effect of the group was significant (f=6.137, p=.001) but not the sex of the participant (f=.003, p=.956).

Table 17: Test of Between Subject Effects

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Group	457.612	1	158.537	6.137	.001*	.134
Sex	.079	3	.079	.003	.956	.000

*P<.05

The three-way interaction that was noted between the age of the image x gender of the image x sex of the participant was further explored in the context of the time taken to respond to each of the categories of images. These interactions are illustrated in Figures 7 & 8).

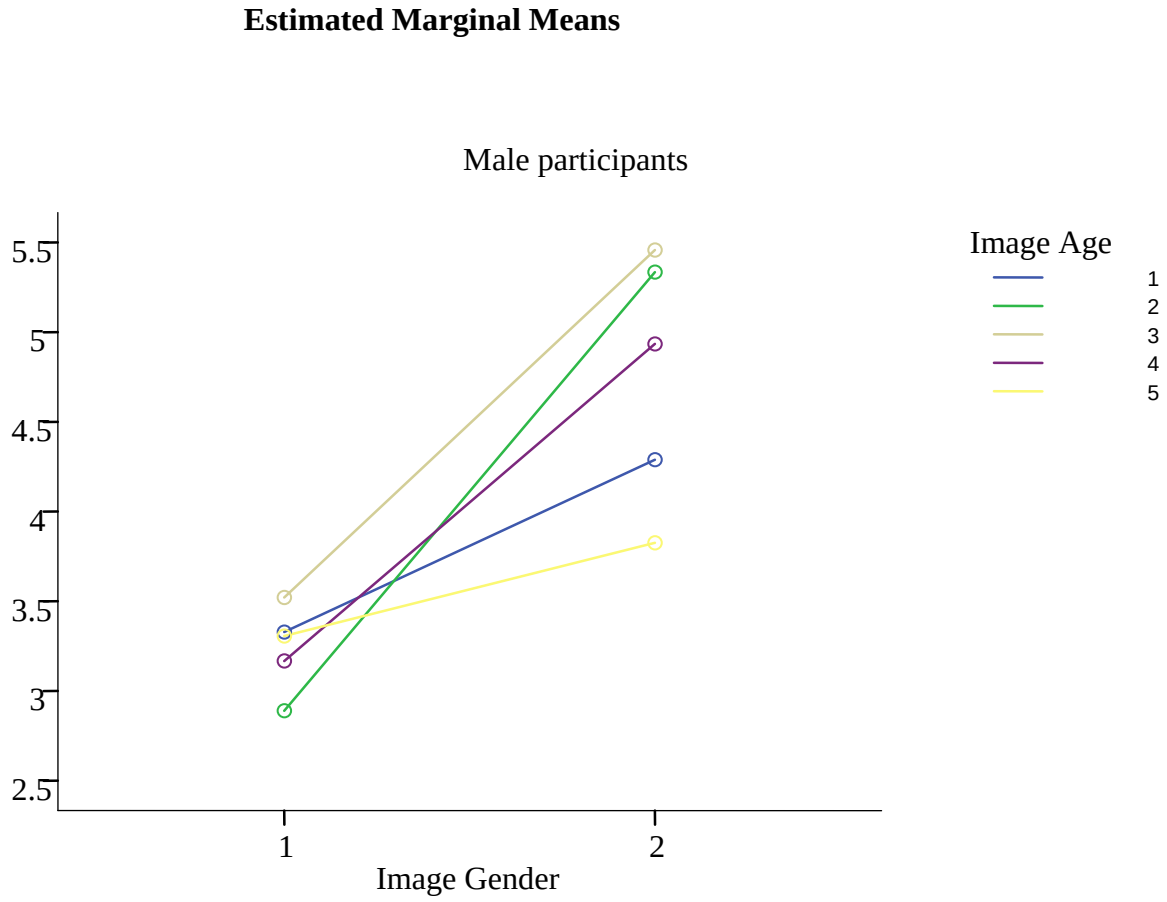


Image Age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult). Image Gender: (1=male, 2= female).

Figure 7. Three- way interaction image age image gender x female participants

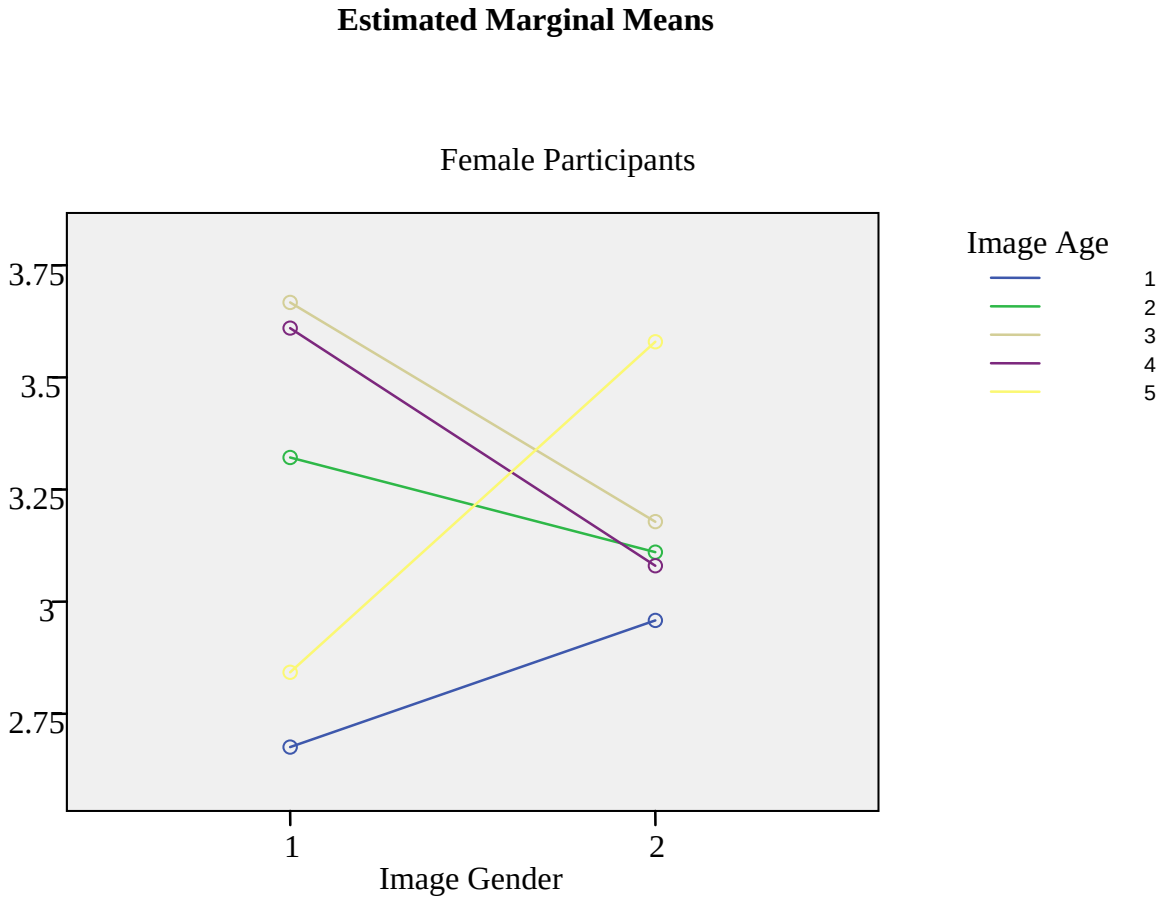


*Image Age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
*Image Gender: (1=male, 2= female)

Figure 8. Three- way interaction image age image gender x female participants (Response time to images).

Employing the Bonferroni post-hoc test, significant differences were found between the sex of the participant, the age of the image and the gender of the image in the time taken to respond to the images. This is based on estimated marginal means.*The mean difference is significant at the .05 level for all of the Bonferroni tests mentioned below.

Males took longer to respond to images of female children (mean= 4.289) than

they did male children (mean = 3.328) and the difference was significant. Females took longer to respond to images of female children (mean=4.326) than male children (mean=3.307) but this difference was not significant as in seen in Table 18.

Table 18: Mean Difference (response to male and female children)

Source Images of Male and Female children	Mean Difference (1-j)	Std. Error	Sig	95% Confidence Interval
Male Participants	.961	.321	.003*	-1.578- -.343
Female Participants	1.020	.577	.080	-2,162 -.123

*P<.05

Males took longer to respond to pubescent females images (mean= 5.334) than pubescent male images (mean=2.890) and this difference was significant. Females took longer to respond to pubescent female images (mean=4.405) than pubescent male images (mean=3.900) and the difference was not found to be significant (see Table19).

Table 19: Mean Difference (response to male and female pubescent)

Source Images of pubescent males and females	Mean Difference (1-j)	Std. Error	Sig	95% Confidence Interval
Male Participants	2.445	.366	.000*	1.780-3.109
Female Participants	.505	.620	.418	-17.33-724

*P<.05

Males took longer to respond to young adult females (mean=5.458) that they did young adult males (mean=3.521) and this difference was significant. Females took longer to respond to images of young adult males (mean=4.604) than young adult females (mean=3.947), this difference was not significant as is seen in Table 20.

Table 20: Mean Difference (response to young adult males and females)

Source Images of young adult males and females	Mean Difference (I-j)	Std. Error	Sig	95% Confidence Interval
Males Participants	1.937	.400	.000*	1.144 -2.730
Females Participants	.655	.740	.377	-810-2.122

*P<.05

Males took longer to respond to images of adult females (mean=4.934) than adult males (3.167) and the difference was significant. Females took longer to respond to images of adult males (mean=4.057) than adult females (mean=4.056). This difference was not significant (see Table 21).

Table 21: Mean Difference (response to adult males and females)

Source Images of adult male and females	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	1.767	.365	.000*	1.045-2.489
Female Participants	.001	.674	.998	-1.334-1.336

*P<.05

It was found that males took longer to respond to images of old females (mean=3.826) than old males (mean = 3.306) though the difference was not significant. However, males participants took significantly longer to respond to old adult females (mean=.523) than they did old adult males (mean=.492). (This difference was found to be significant for the males when the data was log transformed). Females took longer to respond to images of old males (mean=3.998) than old females (mean=3.668). This difference was found not to be significant as is seen in Table 22.

Table 22: Mean Difference (response to older males and females)

Source Images of old Males and Females	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.520	.355	.146	-1.223-.184
Female Participants	.330	.657	.616	-.971-.1.631

Finally, tests of between subject's effects showed that the group was significant in the context of the time taken to respond to the images. (f=253.823, p<.0005). Based on Cohen's (1977) guidelines for reporting effect size (0-0.3, small effect, 0.03-0.05 moderate effect and 0.5 and above large effect size) it can be seen that the effect size was large. (Partial eta2=.681) (see Table 23).

Table 23: Significance of the Group (response time to images)

Source	Time 111 Squared	df	Mean Squared	F	Sig	Partial Eta Squared
Group	475.612	1	6556.626	253.823	.000*	.681

*P<.05

Table 24: Mean Differences between the Groups (response time to images)

Group		Mean Difference	Std. Error	Sig	95% Confidence Interval
Child Sexual Offenders	Low Risk	2.22	.503	.000*	.87-.357
Child Sexual Offenders	Non Sexual Offenders	.202	.534	.001*	.59-3.45

*P<.05

As can be noted from Table 24, there was a significant difference between the Child Sexual Offenders and the low Risk Population in the time taken to respond to images (Mean difference, 2.22, S.E .503, p<.0005). There was also a significant difference between the Child Sexual Offenders and the Nonsexual Offender group in the

time taken to respond to the images (Mean difference, .202, SE=.535, p=.001). Table 25 and Table 26 show the mean response times, standard deviations and the number of participants in each group for response times to male and female images.

Table 25: Mean and standard deviations for response time to male images

Source	Participant	Mean	St. Deviation	N
Male children	Low risk male	2.70	1.722	31
	Nonsexual offender	3.09	1.951	37
	Rapist	3.20	1.249	7
	Child Sexual Offender	4.33	2.681	12
	Female low risk	2.68	1.352	37
Male pubescent	Low risk male	2.31	.866	31
	Nonsexual offender	2.46	1.197	37
	Rapist	2.87	.964	7
	Child Sexual Offender	2.64	1.332	12
	Female low risk	3.32	2.010	37
Male young adult	Low risk male	2.58	1.117	31
	Nonsexual offender	2.79	1.272	37
	Rapist	3.40	1.192	7
	Child Sexual Offender	5.31	4.928	12
	Female low risk	3.67	1.368	37
Male adult	Low risk male	2.72	1.518	31
	Nonsexual offender	2.69	1.441	37
	Rapist	3.65	1.589	7
	Child Sexual Offender	3.61	1.734	12
	Female low risk	3.61	1.769	37
Male older adult	Low risk male	2.48	2.358	31
	Nonsexual offender	2.68	1.315	37
	Rapist	3.49	2.215	7
	Child Sexual Offender	4.58	3.316	12
	Female low risk	2.84	2.381	37

Table 26: Mean and standard deviation response times to female images

Source	Participant	Mean	St. Deviation	N
Female children	Low risk male	2.92	1.213	31
	Nonsexual offender	4.31	4.071	37
	Rapist	4.10	2.696	7
	Child Sexual Offender	5.23	2.582	12
	Female low risk	2.69	1.752	37
Female pubescent	Low risk male	4.04	1.726	31
	Nonsexual offender	4.66	2.781	37
	Rapist	4.95	2.862	7
	Child Sexual Offender	7.68	4.626	12
	Female low risk	3.11	2.182	37
Feale young adult	Low risk male	4.69	3.029	31
	Nonsexual offender	4.62	2.106	37
	Rapist	5.52	2.792	7
	Child Sexual Offender	7.01	6.02	12
	Female low risk	3.18	1.807	37
Female adult	Low risk male	3.96	2.376	31
	Nonsexual offender	3.56	1.319	37
	Rapist	5.10	2.593	7
	Child Sexual Offender	7.12	7.154	12
	Female low risk	3.08	1.613	37
Female old adult	Low risk male	3.41	3.096	31
	Nonsexual offender	3.06	1.906	37
	Rapist	3.53	1.910	7
	Child Sexual Offender	5.31	3.727	12
	Female low risk	3.58	2.816	37

3.4.2 Viewing Time (Move on from Image categories). An ANOVA was carried out to explore viewing time or the time taken to move on from the categories of images. Similar to the above and response time to the images, between subjects effects were the groups (low risk population, child sexual offenders, rapists and nonsexual offenders) and the sex of the participants (males and females). The within subjects

effects were the gender of the image (males and females) and the age of the image (children, pubescent, young adults, adults and old adults).The table below shows the main effects for the age of the image and the gender of the image

Table 27: Main Effects (time to move from images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig Value	Partial Eta Squared
Image Gender	1.270	1	1.270	.282	.596	.002
Image Age	14.698	4	3.675	.841	.500	.007

*P<.05

As can be seen from Table 27, there was no significant main effect for the image Gender (f=.282, p=.596) and there was no significant main effect for image age (f=.841, p=.500) in relation to viewing time of the images.

Table 28: Two -way Interactions (time to move from images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig Value	Partial Eta Squared
Image Gender x Group	27.920	3	9.307	2.067	.108	.050
Image Gender x Sex	9.519	1	9.519	2.114	.149	.017
Image Age x Group	100.804	12	8.400	1.923	.030*	.046
Image Age x Sex	46.652	4	11.663	2.669	.032*	.002
Image Gender x Image Age	128.291	4	32.073	7.119	.000*	.057

*P<.05

As can be seen from Table 28, there was no significant interaction effect

between the gender of the image x groups (f=2.067, p=.108) and there was no significant interaction effect between the image gender x sex of the participants (f=2.114, p=.149). There was however two- way significant interactions found between the age of the image x group (f=1.923,p=.030), a significant interaction between the age of the image x sex of the participant (f=2.669,p=.032) and between the gender of the image x age of the image (f=7.119,p<.0005).

Table 29: Three-way Interactions (time to move on from images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Square
Image Gender x Image Age x Group	37.284	12	3.107	.697	.755	.017
Image Gender x Image Age x Sex	88.492	4	22.123	4.966	.001*	.082

*P<.05

As can be seen from the Table 29, there was no significant interaction between the gender of the image x the age of the image x group (f=.697, p=.755). There was however a significant interaction found between the gender of the image x age of the image x sex of the participants (f=4.966, p=.001).

Table 30 : Between-Subjects (viewing time)

	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Sex of participant	.500	1	.500	.009	.962	.000
Group	1451.691	3	483.897	8.428	.000*	.175

*P<.05

Tests of between – Subjects as illustrated on Table 30, showed that the group had a significant effect (f=8.428, p<.0005). There was no significant effect for the sex of

the participant (f=.009,p=.962). The two way significant interaction that was found between the age of the image x group was explored further.

3.4.3 Age of the Image and the Groups (viewing time). The child sexual offenders took longer to view images of children (mean=8.241) then did the low risk population (mean=4.823) and this difference was found to be significant (see Table 31).

Table 31 : Mean Difference between Groups (viewing time of children)

Group		Mean Difference	Std. Error	Sig	95% Confidence Interval
Child Sexual Offenders	Low Risk	3.418	.860	.001*	1.112-5.725
Child Sexual Offenders	Non Sexual Offenders	3.351	.840	.001*	1.097-5.605

*P<.05

The child sexual offenders took longer to view children (mean=8.241) than did the non sexual offenders (mean=4.890). This difference was also found to be significant. There were no other significant differences found between the groups for the time spent viewing this category of images.

In the category of pubescent images, child sexual offenders took longer (mean=7.156) to view these images than did the low risk group (mean=4.651) (see Table 32). This difference was found to be significant. There were no other significant differences found between the groups for the time spent viewing this category of images.

Table 32: Mean Differences between Groups (viewing time pubescent images)

Group		Mean Difference	Standard Error	Sig	95% Confidence Interval
Child Sexual Offenders	Low Risk	2.506	.801	.013*	.356-4.655

*P<.05

Child Sexual Offenders took longer to view images of young adults (mean=8.489), than the low risk sample (mean=4.779) and this difference was found to be significant (Table 33). Child sexual offenders took longer (mean=8.489) than the non sexual offenders (mean=4.547) to view these images and the difference was also significant.

Table 33: Mean Difference between Groups (viewing time of young adults)

Group		Mean Difference	Std. Error	Sig	95% Confidence Interval
Child Sexual Offenders	Low Risk	3.710	.821	.000*	1.580-5.913
Child Sexual Offenders	Non Sexual Offenders	3.942	.802	.000*	1.790-6.093

*P<.05

In the case of adult images, child sexual offenders viewed these images longer (mean=9.133) than low risk individuals did (mean=4.779) and this difference was significant. Child sexual offenders also viewed this category of images longer than non sexual offenders did (mean=5.244). This difference was also significant (see Table 34).

Table 34: Mean Difference between Groups (viewing time adults)

Group		Mean Difference	Standard Error	Sig	95% Confidence Interval
Child Sexual Offenders	Low Risk	4.354	1.050	.000*	1.565-7.200
Child Sexual Offenders	Non Sexual Offenders	3.899	1.026	.001*	1.136-6.642

*P<.05

Child sexual offenders viewed images of older people (mean=9.653) longer than the low risk group (mean=4.863) and also the non sexual offender group (mean=4.693). Both of these differences were significant as can be seen in Table 35.

Table 35: Mean Difference between Groups (viewing time older adults)

Group		Mean Difference	Standard Error	Significant	95% Confidence Interval
Child Sexual Offenders	Low risk	4.790	1.082	.000*	1.887-7.694
Child Sexual Offenders	Non Sexual Offenders	4.960	1.057.	.000*	2.123-7.797

*P<.05

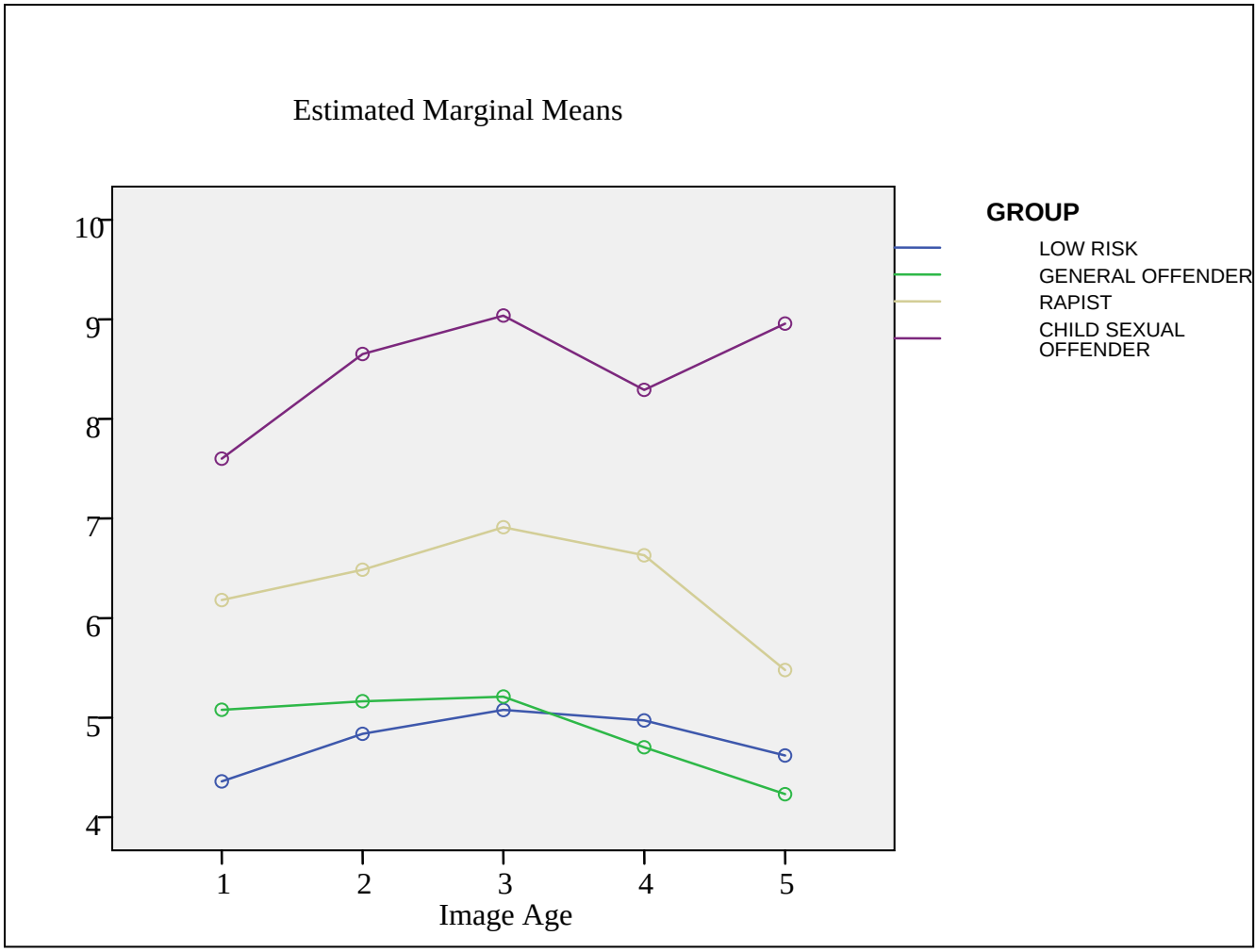


*Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).

Figure 9: Two-way interaction: Image Age x Groups (Viewing time of images).

The three way significant interaction between the age of the image, the gender of

the image and the sex of the participant was also examined. This interaction is displayed in figures: 10 & 11. Employing the Bonferonni post-hoc test, significant differences were found between the age of the image, the gender of the image and the sex of the participant in relation to the amount of time spent viewing the different categories of images.It was found that males viewed female children (mean=7.616) longer than male children (mean=5.439) and this difference was significant (see Table 36). Table 36 also illustrates that females viewed female children longer (mean=5.914) than they did images of male children (mean=5.511) but this difference was not significant.

Table 36: Mean Difference (viewing time male/female children)

Source Images of Male and Female children	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	2.178	.434	.000*	1.317-3.038
Female Participants	.402	.803	.618	-1.189-1.993

*P<.05

Males viewed images of pubescent males longer (mean=6.179) than they did pubescent females (mean = 5.192) and this difference was also significant (see Table 37). Females viewed images of pubescent females longer (mean=6.213) than pubescent males (mean= 6.042) but the difference found was not significant.

Table 37: Mean Difference (viewing time pubescent male/female)

Source Images of Pubescent Males and Females	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.987	.345	.005*	.304-1.670
Female Participants	.172	.638	.788	-1.091-1.435

*P<.05

As is seen on Table 38, males viewed young adult females longer (mean=7.120)

than they did young adult males (mean=4.890) and this difference was significant. Females viewed young adult females longer (mean= 5.984) than they did males (mean = 5.923) but the difference noted was not significant. Males viewed adult males for longer (mean=7.634) than adult females (mean=5.219) and this difference was significant. Females viewed adult males (mean =6.957) for longer than they did adult females (mean=5.828) and this difference was not significant (see Table 39).

Table 38: Mean Difference (viewing time young adult male/females)

Source Images of Young Adult Male and Females	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.2.230	..428	.000*	.1.383-3.076
Female Participants	.061	.791	.939	-1.505-1.626

*P<.05

Table 39: Mean Difference (viewing time male/female adults)

Source Images of Male and Female Adults	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	2.415	.397	.000*	1.628-3.201
Female Participants	1.129	.735	.127	-325-2.584

*P<.05

Males took longer to view old adult females (mean=6.311) than old adult males (mean=5.569) but this difference was not significant. Females viewed old adult male images longer (mean=6.738) than female images (mean=6.604) but the difference was not significant (see Table 40).

Table 40: Mean Difference (viewing time male/female older adults)

Source Images of Older Males and Females	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.742	.385	.057	-0.21-1.-504
Fe male Participants	.134	.712	..851	-1.276-1.544

*P<.0

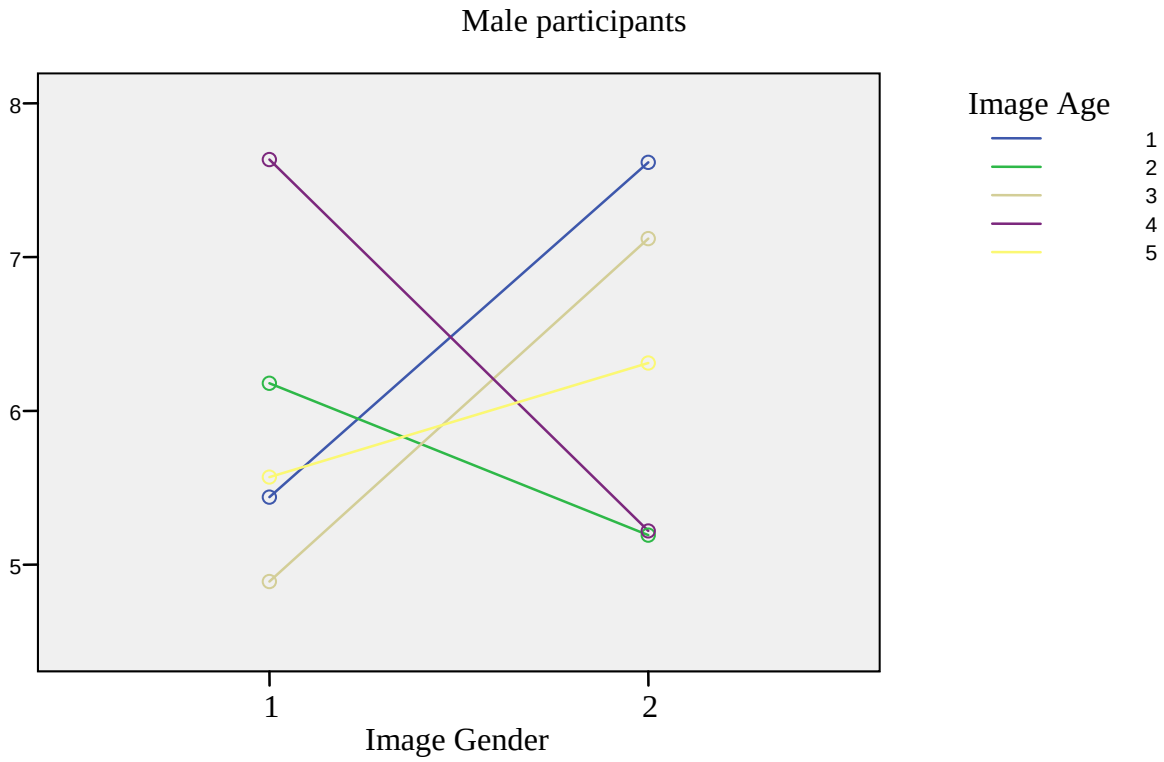


*Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult). * Image Gender: 1=Male, 2=Female.

Figure 10: Three-way interaction: Image Age x Image Gender x Male participants (Viewing time).

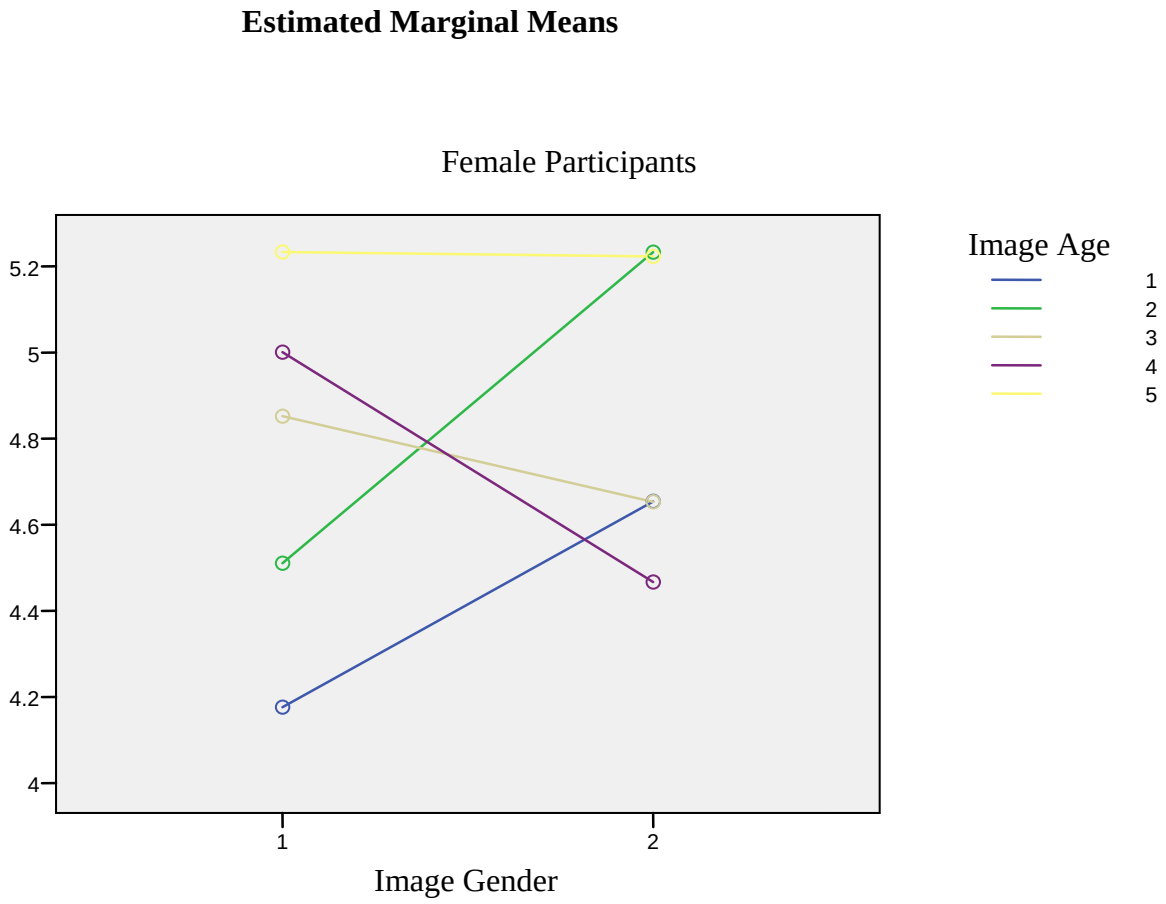


*Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult). * Image Gender: 1=Male, 2=Female.

Figure 11: Three-way interaction: Age of image x Gender of image x Female participants. (Viewing time)

Table 41 and 42 show the means, standard deviations and the number of participants in each group for the viewing time of male and female images.

Table 41: Means viewing time (Male images)

Source	Participant	Mean	St. Deviation	N
Male children	Low risk male	4.10	2.014	31
	Nonsexual offender	4.44	2.404	37
	Rapist	5.68	3.255	7
	Child Sexual Offender	7.54	5.219	12
	Female low risk	4.18	1.863	37
Male pubescent	Low risk male	3.82	1.192	31
	Nonsexual offender	3.88	1.732	37
	Rapist	5.21	1.825	7
	Child Sexual Offender	6.66	4.286	12
	Female low risk	4.85	2.418	37
Male young adult	Low risk male	4.06	1.634	31
	Nonsexual offender	4.26	1.902	37
	Rapist	5.63	2.141	7
	Child Sexual Offender	8.32	.123	12
	Female low risk	5.23	1.798	37
Male adult	Low risk male	4.21	1.926	31
	Nonsexual offender	4.14	1.939	37
	Rapist	6.21	3.513	7
	Child Sexual Offender	6.21	3.224	12
	Female low risk	5.23	2.211	37
Male old adult	Low risk male	3.86	2.248	31
	Nonsexual offender	4.071	1.749	37
	Rapist	5.29	2.496	7
	Child Sexual Offender	7.65	5.392	12
	Female low risk	4.47	3.211	37

Table 42: Mean and standard deviation for viewing time (Female images)

Source	Participant	Mean	St. Deviation	N
Female children	Low risk male	4.65	1.170	31
	Nonsexual offender	5.72	4.139	37
	Rapist	6.68	3.375	7
	Child Sexual Offender	7.66	3.454	12
	Female low risk	4.51	2.341	37
Female pubescent	Low risk male	5.68	2.144	31
	Nonsexual offender	6.45	3.342	37
	Rapist	7.76	4.898	7
	Child Sexual Offender	10.65	5.872	12
	Female low risk	5.00	4.544	37
Female young adult	Low risk male	6.36	3.358	31
	Nonsexual offender	6.16	2.676	37
	Rapist	8.19	4.600	7
	Child Sexual Offender	9.76	6.372	12
	Female low risk	4.65	2.133	37
Female adult	Low risk male	5.79	2.947	31
	Nonsexual offender	5.27	1.995	37
	Rapist	7.05	3.266	7
	Child Sexual Offender	10.37	8.369	12
	Female low risk	4.65	2.217	37
Female old adult	Low risk male	4.93	3.369	31
	Nonsexual offender	4.39	2.251	37
	Rapist	5.66	3.204	7
	Child Sexual Offender	10.26	9.710	12
	Female low risk	5.22	3.212	37

3.5 Attractiveness Rating of the Images

In order to explore the attractiveness ratings given to the different categories of images an ANOVA was conducted. Between subjects effects were the groups (low risk population, child sexual offenders, rapists and nonsexual offenders) and the sex of the participants (males and females). The within subjects effects were the gender of the

image (males and females) and the age of the image (children, pubescent, young adults, adults and old adults). The table below shows the main effect for the gender of the image and the age of the image in relation to attractiveness rating provided.

Table 43: Main Effect (attractiveness rating)

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of Image	6.796	1	6.796	5.062	.026*	.041
Age of the Image	31.901	4	7.975	29.161	.000*	.197

*P<.05

As can be seen from Table 43, both the main effect of the gender of the image (f=5.062,p=.026) and the main effect of the age of the image was significant (f=29.161,p<.0005).

As can be seen from Table 44, the two ways interaction between the gender of the image x group was not significant (f=.659, p=.597). There was a significant two-way interaction (f=33.574, p<.0005) between the gender of the image x sex of the participant and also between the age of the image x group (f=1.809, p=.044) and also a significant two-way interaction between the gender of the image and the age of the image (f=4.714, p=.001).

Table 44: Two-way Interactions (attractiveness ratings)

Source	Type 111 sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of the Image x Group	2.655	3	.855	.659	.597	.016
Gender of Image x Sex of participant	45.075	1	45.075	33.574	.000*	.220
Age of the Image x Group	5.937	12	.495	1.809	.044*	.044
Age of the Image x Sex of the participant	4.122	4	1.030	3.708	.055	.031
Gender of the Image x Age of the Image	4.906	4	1.227	4.714	.001*	.038

*P<.05

Table 45: Three -way Interactions (attractiveness ratings)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of the Image x Age of the Image x Group	3.802	12	.317	1.218	.267	.030
Gender of the Image x Age of the Image x Sex of the participant	22.579	4	5.645	21.694	.000*	.154

*P<.05

As can be seen from Table 45, the three-way interaction between the gender of the image x age of the image x sex of the participants was not significant (f=1.218, p=.267). However, the three-way interaction between the genders of the image x age of the image x sex of the participant was significant. (f=21.694, p<.0005). Tests of between subject effects showed the group to be significant in relation to attractiveness ratings given to the images (f=2.892, p=.038) (see Table 46). The sex of the participant was not significant (f=.039, p=.844).

Table 46: Between Subject Effects (attractiveness rating)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Group	28.296	3	9.432	2.892	.038*	.068
Sex of the participant	.127	1	.127	.039	.844	.000

*P<.05

The interaction between the age of the image and the group was explored further in the context of attractiveness ratings. (See figure 12) The nonsexual offenders rated children more attractive (mean=.642) than did the low risk group (mean=.142) and this difference was significant (see Table 47).

Table 47: Mean Differences between Groups (attractiveness ratings for children)

Group		Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Non Sexual Offenders	Low Risk	.499	.160	.013*	.071-.928

*P<.05

It was also noted that non sexual offenders rated pubescent images as more attractive (mean=1.184) than did the low risk group (see Table 48). This difference was significant. Non sexual offenders (see Table 49) also rated young adults as more attractive (mean=1.359) than the low risk group (mean=.868) as can be seen from the tables below theses differences were also significant. There were no other significant differences found between the groups for the other categories of images (adults and old adults) for attractiveness ratings of the images.

Table 48: Mean Difference between Groups (attractiveness rating for pubescent images)

Group		Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Non Sexual Offenders	Low Risk	.553	.183	.019*	.61-1.045

*P<.05

Table 49: Mean Difference between Groups (attractiveness rating for young adults)

Group		Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Non Sexual Offenders	Low Risk	.491	.181	.046*	.005-.976

*P<.05

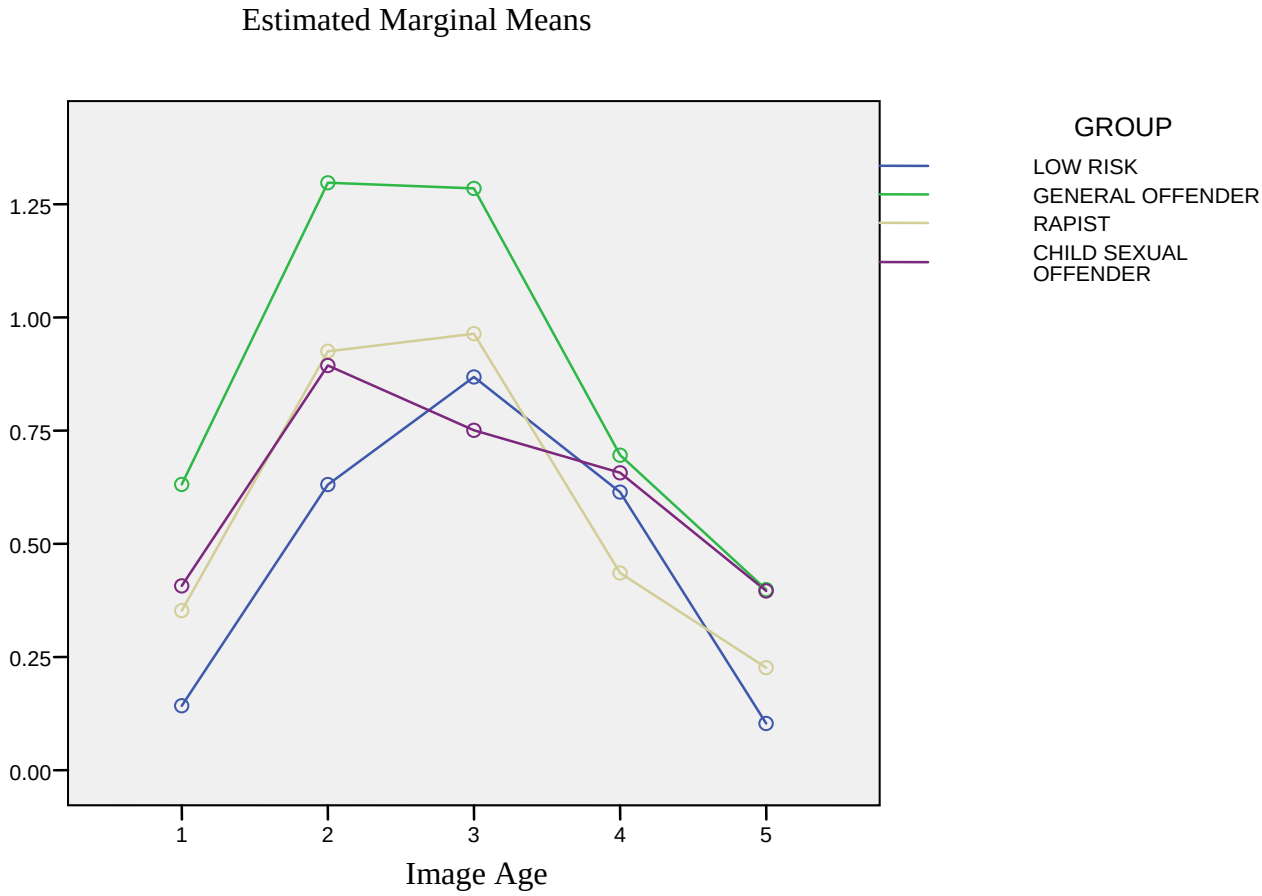


Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).

Figure 12: Two –way interaction between the Image Age x Group (Attractiveness ratings).

The three-way significant interaction between the age of the image, the gender of the image and the sex of the participant was examined. Bonferroni post hoc tests revealed the following (see Figures 13 and 14).

Table 50: Mean Differences in Attractiveness Ratings (male and female children)

Attractiveness rating male and female children images	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.323	.068	.000*	.188-.458
Female Participants	.186	.126	.143	-.064-.436

*P<.05

Males rated female children as more attractive (mean=.542) than male children (mean=.219) and this difference was significant. Females also rated female children as more attractive (mean=.495) than male children (mean =.308) but this difference was not significant (see Table 50).

Males rated pubescent females as more attractive (mean=1.636) than pubescent males (mean=.294) and the difference was significant. Females rated pubescent males as more attractive (mean=.812) than pubescent females (mean=.663) and this difference was not significant (see Table 51).

Table 51: Difference in Attractiveness Ratings (male/ female pubescent)

Source Attractiveness rating male and female pubescent images	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.1.342	.158	.000*	-1.654—1.029
Female Participants	.1.49	.292	.610	-428-.726

*P<.05

Table 52 shows that males rated young adult females (mean=1.566) as more attractive than young adult males (mean=.330) and this difference was significant. Females rated young adult males as more attractive (mean=1.456) than young adult females (mean=.739) and this difference was also significant.

Table 52: Difference in Attractiveness Ratings (young adult males/ females)

Source Attractiveness rating young adult males and females	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.1.236	.178	.000*	.844-1.588
Female Participants	.717	.329	.031	.067—1.386

*P<.05

Males rated adult females (mean=.870) as more attractive than adult males

(mean=.274). Females rated adult males as more attractive (mean=1.193) than adult females (mean=.402) and both of these differences were significant (see Table 53).

Table 53: Differences in Attractiveness Ratings (adult males/females)

Source Attractiveness rating male and female adults	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.596	.129	.000*	318-1.265
Female Participants	.791	.239	.001*	-1265-3.18

*P<.05

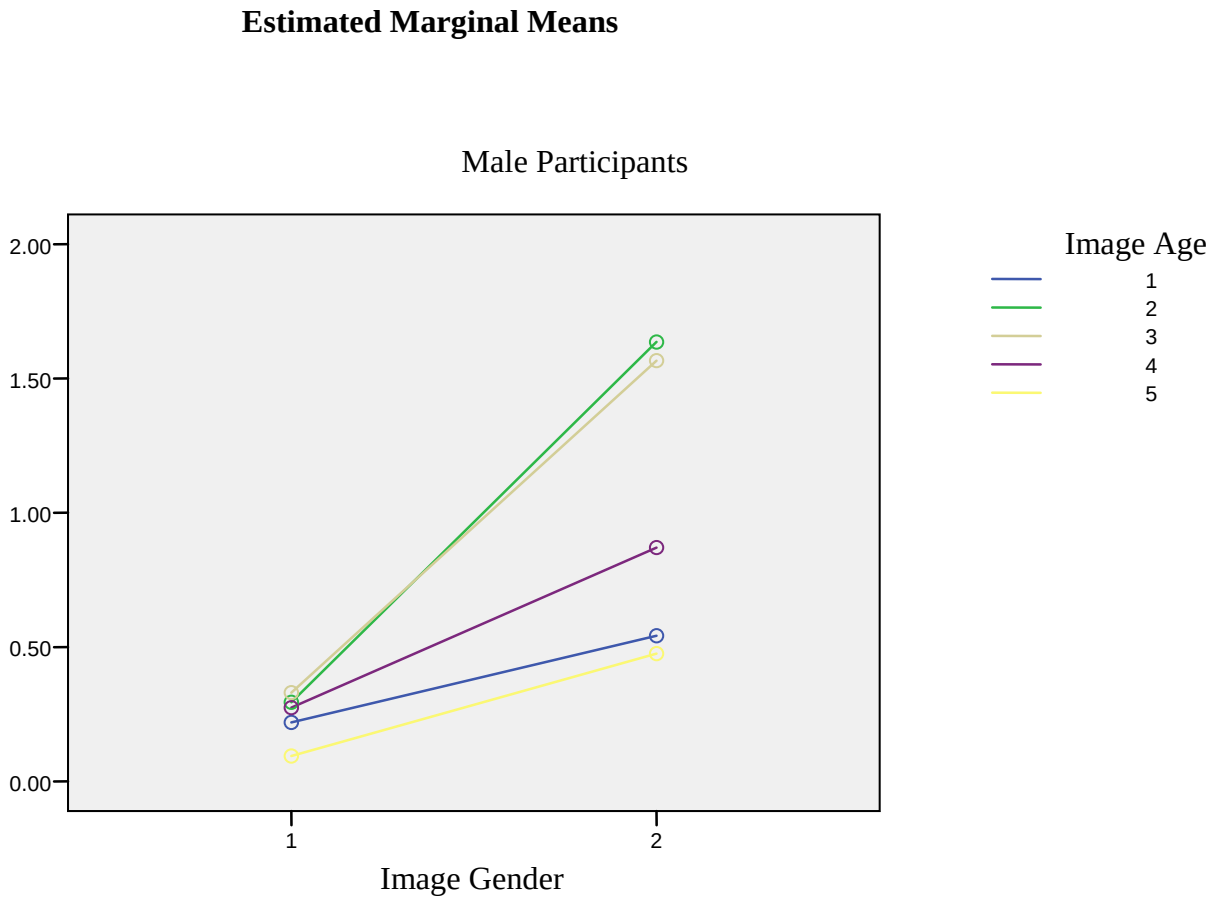
Finally, male participants rated older females as more attractive (mean=.475) than older adult males (mean=.094) and this difference was significant (see Table 54). Female participants rated older adult females as more attractive (mean=.344) than older adult males (mean=.164) but this difference was not significant.

Table 54: Differences in Attractiveness Ratings (older males/ females)

Source Attractiveness rating Old males and females	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Male Participants	.381	.085	.000*	.214-.549
Female Participants	.180	.157	.253	-.130-.490

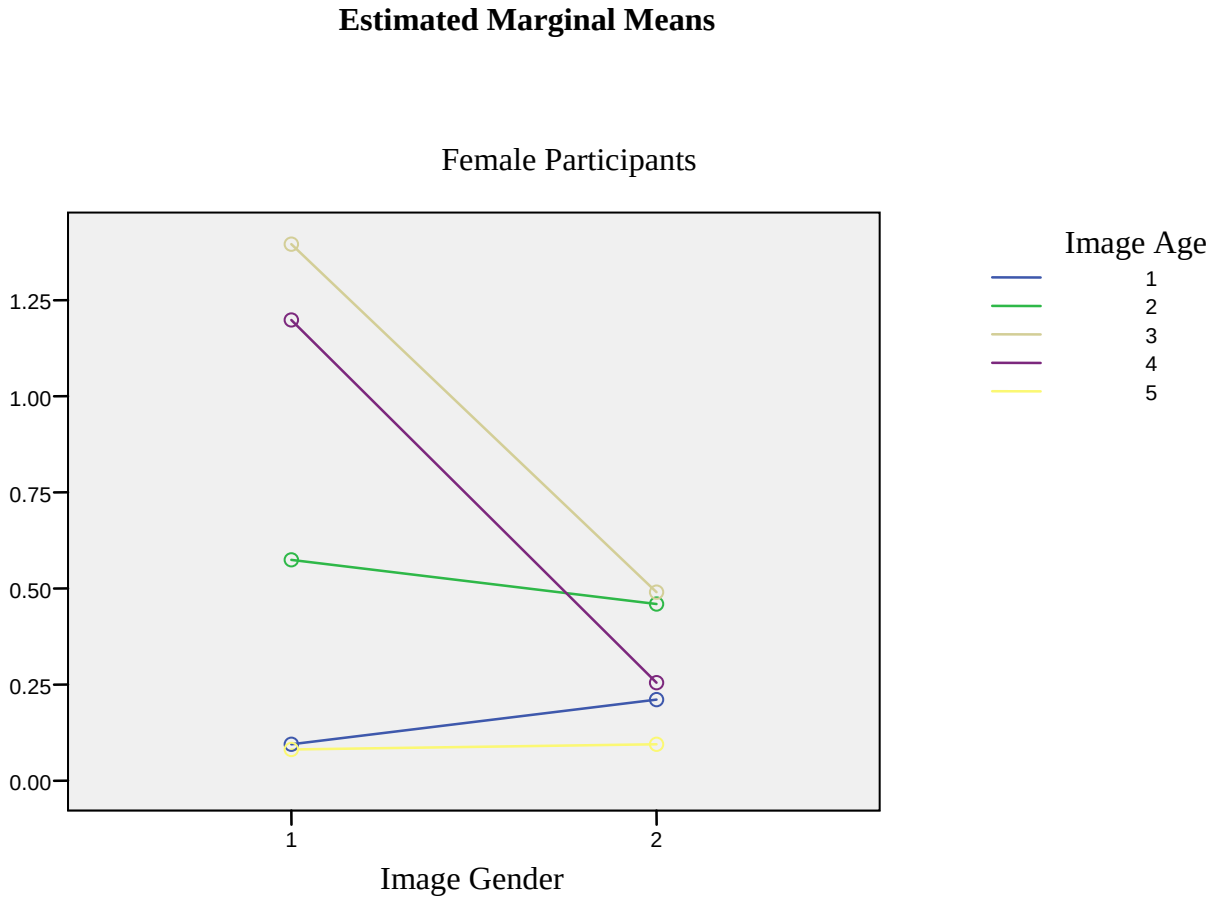
*P<.05

Tables 53 and 54 show the means, standard deviations and the number of participants for the attractiveness ratings given to both male and female image blocks.



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult). * Image Gender: 1=Male, 2=Female

Figure 13: Three-way interactions Image Age x Image Gender x Male participants (Attractiveness rating).



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult). * Image Gender: 1=Male, 2=Female

Figure 14: Three-way interaction Image age x image gender x female participants (Attractiveness rating).

Table 55 : Mean Attractiveness ratings (Male images)

Source	Participant	Mean	St. Deviation	N
Male children	Low risk male	.0054	.0293	31
	Nonsexual offender	.5000	1.0496	37
	Rapist	.1905	.50395	7
	Child Sexual Offender	.1806	.43495	12
	Female low risk	.946	.25319	37
Male pubescent	Low risk male	.0565	.22089	31
	Nonsexual offender	.5405	1.138	37
	Rapist	.3929	.93382	7
	Child Sexual Offender	.1875	.33920	12
	Female low risk	.5743	.73802	37
Male young adult	Low risk male	.2698	.57423	31
	Nonsexual offender	.5307	1.0153	37
	Rapist	.3777	.66893	7
	Child Sexual Offender	.1439	.24656	12
	Female low risk	1.3956	1.0838	37
Male adult	Low risk male	.2796	.72570	31
	Nonsexual offender	.4685	1.1062	37
	Rapist	.2381	.49868	7
	Child Sexual Offender	.1111	.38490	12
	Female low risk	1.1982	1.19013	37
Male old adult	Low risk male	.0108	.05987	31
	Nonsexual offender	.2703	.69319	37
	Rapist	.0952	.25198	7
	Child Sexual Offender	.0000	.000	12
	Female low risk	.1264	.47207	37

Table 56: Mean Attractiveness ratings (Female images)

Source	Participant	Mean	St. Deviation	N
Female children	Low risk male	.2581	.50647	31
	Nonsexual offender	.7622	1.111	37
	Rapist	.5143	1.02539	7
	Child Sexual Offender	.6333	.66515	12
	Female low risk	.2108	.49877	37
Source				
Female pubescent	Low risk male	1.4323	1.17314	31
	Nonsexual offender	2.0541	1.10920	37
	Rapist	1.4571	1.41758	7
	Child Sexual Offender	1.6000	1.18168	12
	Female low risk	.4595	.92360	37
Source				
Female young adult	Low risk male	1.3180	1.16099	31
	Nonsexual offender	2.0386	1.12619	37
	Rapist	1.5510	1.3910	7
	Child Sexual Offender	1.3571	1.19600	12
	Female low risk	.4903	.92676	37
Source				
Female adult	Low risk male	.7235	.72837	31
	Nonsexual offender	.9822	.69871	37
	Rapist	.6327	.56458	7
	Child Sexual Offender	1.2024	.84944	12
	Female low risk	.2548	.40425	37
Source				
Female old adult	Low risk male	.2258	.38381	31
	Nonsexual offender	.5270	.79884	37
	Rapist	.3571	.74801	7
	Child Sexual Offender	.7917	1.28732	12
	Female low risk	.0946	.32994	37

3.6 Correlations between Attractiveness Rating of the Images and Viewing Time

3.6.1 Images of male and female children. The last area to be investigated in the viewing time measure was the correlations that may exist between the attractiveness ratings of the images and the time spent viewing them. To examine theses possible correlations, a split file was used to examine both the groups and the sex of the participants. Amongst the female participants viewing time correlated with ratings of

sexual attractiveness for images of male children (r=.463, p=.004) and for images of female children (r=.503, p=.001). It was noted that amongst the male child sexual offenders viewing time correlated with ratings of sexual attractiveness for images of male children (r=.463, p=.004).

3.6.2 Images of pubescent males and females. Viewing time correlated with ratings of sexual attractiveness for images of pubescent males for both male (r=.534, p=.002) and female (r=.706, p<.0005) low risk groups. Viewing time also correlated with ratings of sexual attractiveness for images of pubescent females amongst the female participants (r=.564, p<.0005).

3.6.3 Images of young adult males and females. Viewing time correlated with ratings of sexual attractiveness on the image block of young adult males amongst low risk males (r=.574,p=.000) and low risk females (r=5.05,p=.001). It also correlated with ratings of sexual attractiveness on the image block of young adult females amongst female participants (r=.377, p=.021).

3.6.4 Images of adult males and females. Viewing time correlated with ratings of sexual attractiveness on the images of adult males provided by low risk males (r=.472, p<.0005) and low risk females (r=.484, p=.002). Viewing time correlated with ratings of sexual attractiveness given to adult female images by the rapist sample (r=.811, p=.027).

3.6.5 Images of older males and females. Viewing time correlated with ratings of sexual attractiveness on the image block of old adult male images amongst the female sample (r=.393, p=.016). Finally it was noted that amongst the low risk male sample, viewing time correlated with ratings of sexual attractiveness for old female images

(r=.588, p=.001).

3.7 Considerations Noted

Due to the fact that females only participated in the low risk group and males participated across all other groups, it was decided to merge the groups and the gender of the participants in order to explore the possibility of this affecting the findings .The reason that female sexual offenders did not participate in this research is as follows. The prisoner based research ethics committee highlighted that:

"Given the fact that there are few female sexual offenders within the Irish Prison system, it is highly probable that these research findings could potentially lead to the identification of the offender and the victim, the Committee request that this research be confined to male offenders".

The same analysis as outlined above was re run with this new variable (combined sex of the participant and group) in the context of the time to respond to the image categories, the time to view the image categories and the attractiveness rating given to each of the categories of images. The image blocks as outlined earlier were images of children, pubescent, young adults, adults and old adults. This new variable created was called the group and gender of participant combined (see Table 57). As above, an AVOVA was carried out for the time to respond to the images, the time to move from the images and the attractiveness ratings of the images. Between subjects effects were the groups (low risk population, child sexual offenders, rapists and nonsexual offenders and the combined sex of the participants .The within subjects effects were the gender of the image (males and females) and the age of the image

(children, pubescent, young adults, adults and old adults).

Table 57: Breakdown of Gender and Group of Participants -Viewing Time Measure

Male low risk Group
Females Low Risk Group
Male Child Sexual Offenders
Rapist
Male Non Sexual Offenders

3.7.1 Respond to image categories (viewing time). The main effect of the gender of the image was significant (f=39.249, p<.0005). The main effect of the age of the image was also significant (f=5.421, p<.0005). The two-way interaction between the gender of the image and the combined group and sex of the participant was also significant (f=5.151, p=.001) (see Table 58).

Table 58: Main Effects - Response Time to Images

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of the Image	293.893	1	293.893	39.249	.000*	.248
Age of the Image	60.066	4	15.017	5.421	.000*	.044

*P<.05

Table 59: Two - way Interactions - Response Time to Images

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of Image x combined group/sex of participant	154.288	4	38.572	5.150	.001*	.148
Age of the image x combined group/sex of the participant	60.276	16	3.767	1.360	.157	.004
Age of the image x gender of image	45.178	4	11.295	4.450	.002*	.036

*P<.05

The two-way interaction between the age of the image and the combined group and sex of the participant was not significant (f= 1.360, p=.157). The two-way interaction between the gender of the image and the age of the image was significant

(f=4.450, p=.002). Finally the three-way interaction between the age of the image, the gender of the image and the combined group and sex of the participant was significant (f=2.910, p<.0005) (see Table 59).

Table 60, shows the three- way interaction between the age of the image x gender of the image x combined group and sex of the participant was significant (f=2.910, p<.0005)

Table 60: Three -way Interaction - Response Time to Images

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age image x gender of image x combined group/sex of participant	118.198	16	7.387	2.910	.000*	.089

*P<.05

Tests of between subject's effects showed that the new combined group/sex of participant had a significant effect (see Table 61).

Table 61: Between Subject Effects

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Combined group/sex of participant	526.858	1	131.714	5.099	.001*	.794

*P<.05

Using Bonferonni post hoc tests the significant three-way interaction found between the age of the image, the gender of the image and the combined group and sex of the participant in the context of response time to the images was explored further. (See figures: 15-19). Males in the low risk group took longer to respond to female children (mean=.291) than to male children (mean=.2697). This difference was not

significant. Females of the low risk group took longer to respond to female children (mean=2.958) than they did male children (mean=2.676). This difference was not significant. Male nonsexual offenders took significantly longer to respond to images of female children (mean=4.301) than they did male children (mean=3.008). The rapist also took longer to respond to female children (mean=4.698) than male children (mean=3.197). This difference was not found to be significant. The male child sexual offenders took longer also to respond to female child images (mean=.5229) than male children (mean=.4431). This difference was not found to be significant (see Table 62).

Table 62: Difference Response Time (male and female children)

Source	Mean Difference (I-J)	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.213	..420	.595	-6.07-1.054
Low Risk Females	.282	.384	.463	-.478-1.043
Male Non Sex Offenders	1.293	.384	.002*	.459-1.980
Rapist	1.501	.883	.092	.-2.47-3.249
Male Child sexual Offenders	.0798	.674	.185	-.436-2.234

*P<.05

Males of the low risk group took significantly longer to respond to female pubescent images (mean=4.040) than they did male pubescent images (mean=2.311). Females of the low risk group tool longer to respond to male pubescent images (mean=3.321) than they did female pubescent images (mean=3.110) though the difference was not significant. The male in the non sexual offender group took significantly longer to respond to female pubescent images (mean =4.661) than they did male pubescent images (mean=2.464). The rapist took significantly longer to respond to female pubescent images (mean=4.952) than they did male pubescent images

(mean=2.865). The male child sexual offenders took significantly longer to respond to pubescent female images (mean= 7.684) than they did to pubescent male images (mean=3.919).This is displayed in Table 63.

Table 63: Differences Response Time (pubescent male and females)

Source	Mean Difference (I-J) male/female children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	1.729	. 451	. 000*	.835-2.662
Low Risk Females	. 211	. 413	. 610	-607-1.029
Male Non Sex Offenders	2.197	. 413	. 000*	1.380-3.015
Rapist	2.087	.950	.030*	.207-3.967
Male Child sexual Offenders	3.765	.725	. 000*	2.329-5.201

*P<.05

Table 64 shows that males in the low risk group took longer to respond to young female adults (mean=4.689) than they did to young adult males (mean=2.584). This difference was found to be significant. Females of the low risk group took longer to respond to images of young adult males (mean=3.667) than to young adult females (mean=3.178). This difference was not significant. *When the data was log transformed this difference became significant. Females of the low risk group took significantly longer to respond to young male adult images (mean=.535) than they did young adult females images (mean=.448). (See Appendix B Table 36). The males in the non sexual offender groups took significantly longer to respond to images of young adult females (mean=4.616) than they did young adult males (mean=2.789). The rapists took longer to respond to images of young adult females (Mean=5.516) than they did young adult males (mean=3.405). This difference was not significant. * When the data was log

transformed this particular difference became significant. The rapists took significantly longer to respond to young female images (mean=.689) than they did to young adult males images (mean=.511) * the male child sexual offenders took longer to respond to young females images (mean=7.001) than they did male young images (mean=5.360). This difference was not significant. Here also this difference became a significant finding when the data was log transformed. Male child sexual offender took significantly longer to respond to young adult female images (mean=.750) than they did to young male images (mean=.610) (see Appendix B Table 36).

Table 64: Differences Response Time (male and female young adults

Source	Mean Difference (I-J) male/female children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	2.104	.538	.000*	1.038-3.170
Low Risk Females	.489	.493	.323	-.487-1.465
Male Non Sex Offenders	1.827	.493	.000*	.851-2.803
Rapist	2.111	1.133	.065	-.132-4.355
Male Child sexual Offenders	1.641	.865	.051	-.009-3.418

*P<.05

Males in the low risk group took significantly longer to respond to adult female images (mean=.3958) than they did adult male images (mean=2.720). Females in the low risk group took longer to respond to adult male images (mean=3.610) than they did to female adult images, though this difference was not found to be significant. This difference became significant when the data was log transformed (see Appendix B Table 37). Females in the low risk group took significantly longer to respond to adult males images (mean=.511) than they did adult female images (mean=.440). The males in the

nonsexual offender group took longer to respond to adult female images (mean=3.562) than they did male adult images (mean=2.688). This difference was not significant. When the data was log transformed this difference became significant. Males in the non sex offender group took significantly longer to respond to adult female images (mean=.521) than they did to adult male images (mean=.384) (see Appendix B Table 37). The rapists took longer to respond to female adult images (mean=5.097) than they did adult male images (mean=3.647). This difference was not found to be significant. The males in the child sexual offender group took significantly longer to respond to adult female images (mean=7.119) than they did to adult male images (mean=3.613). (See Table 65).

Table 65: Differences Response Time (male and female adults)

Source	Mean Difference (I-J) male/female children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	1.239	.490	.013*	-2.209-.268
Low Risk Females	.530	.449	.240	-.359-1.418
Male Non Sex Offenders	.874	.449	.054*	-.015-1.762
Rapist	1.45	1.032	.163	-.593-3.492
Male Child sexual Offenders	3.506	.788	.000*	1.947-5.067

*P<.05

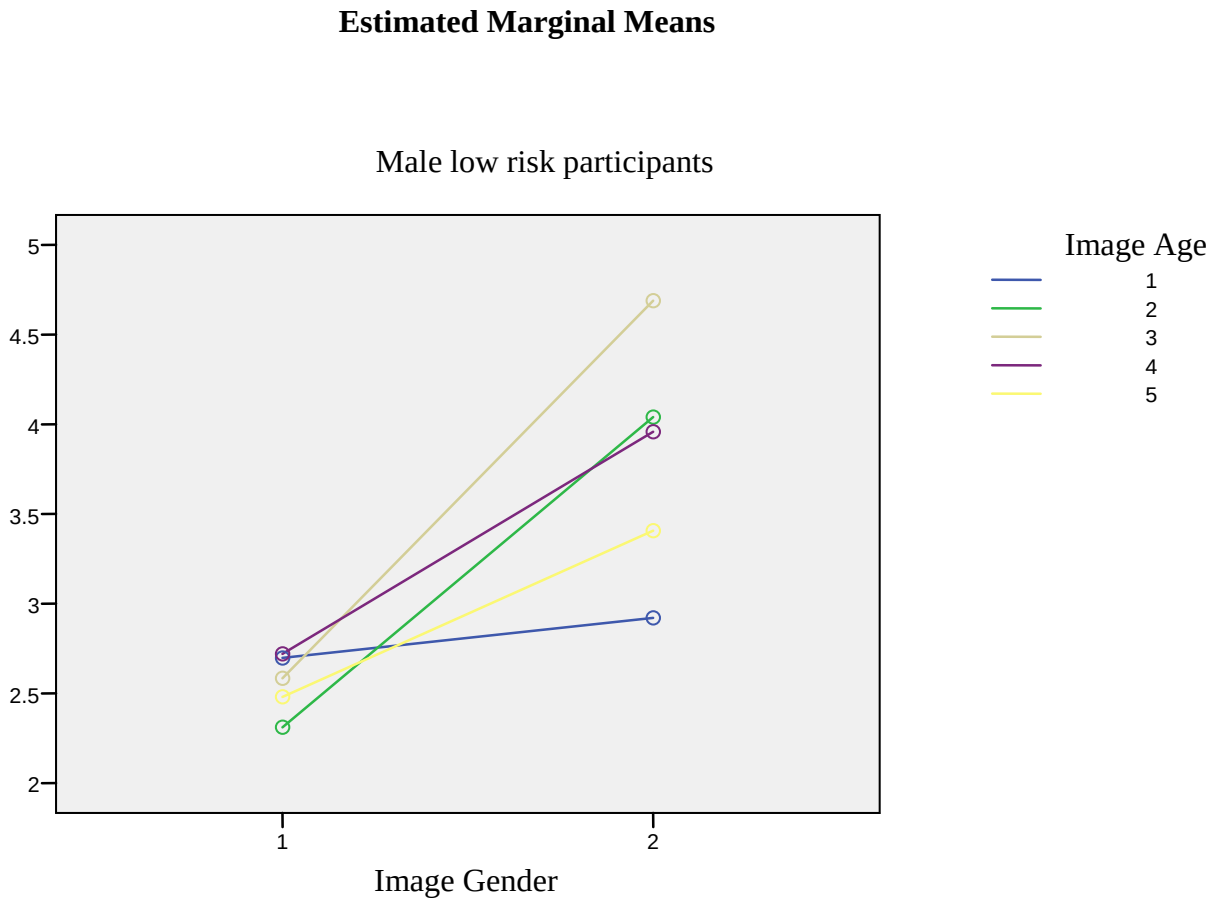
Table 66 shows that males in the low risk group took longer to respond to older female images (mean=3.579) than they did to images of older males (mean=2.480). This difference was found to be significant. Females in the low risk group took longer to respond to older female images (mean=3.579) than they did to older male images (mean=2.843). This difference was not significant. This finding became significant when the data was log transformed (see Appendix B Table 38). Females in the low risk

group took significantly longer to respond to older female images (mean=.486) than they did to older male images (mean=.375). The males in the non sexual offender group took longer also to respond to older female images (mean=3.056) than they did to old male images (mean=2.676). The rapist took longer to respond to older female images (mean=3.525) than to older male images (mean=3.489). The males in the child sexual offender group took longer to respond to older female images (mean=5.314) than older male images (mean=4.578). None of these differences were found to be significant.

Table 66: Differences Response Time (male and female older adults)

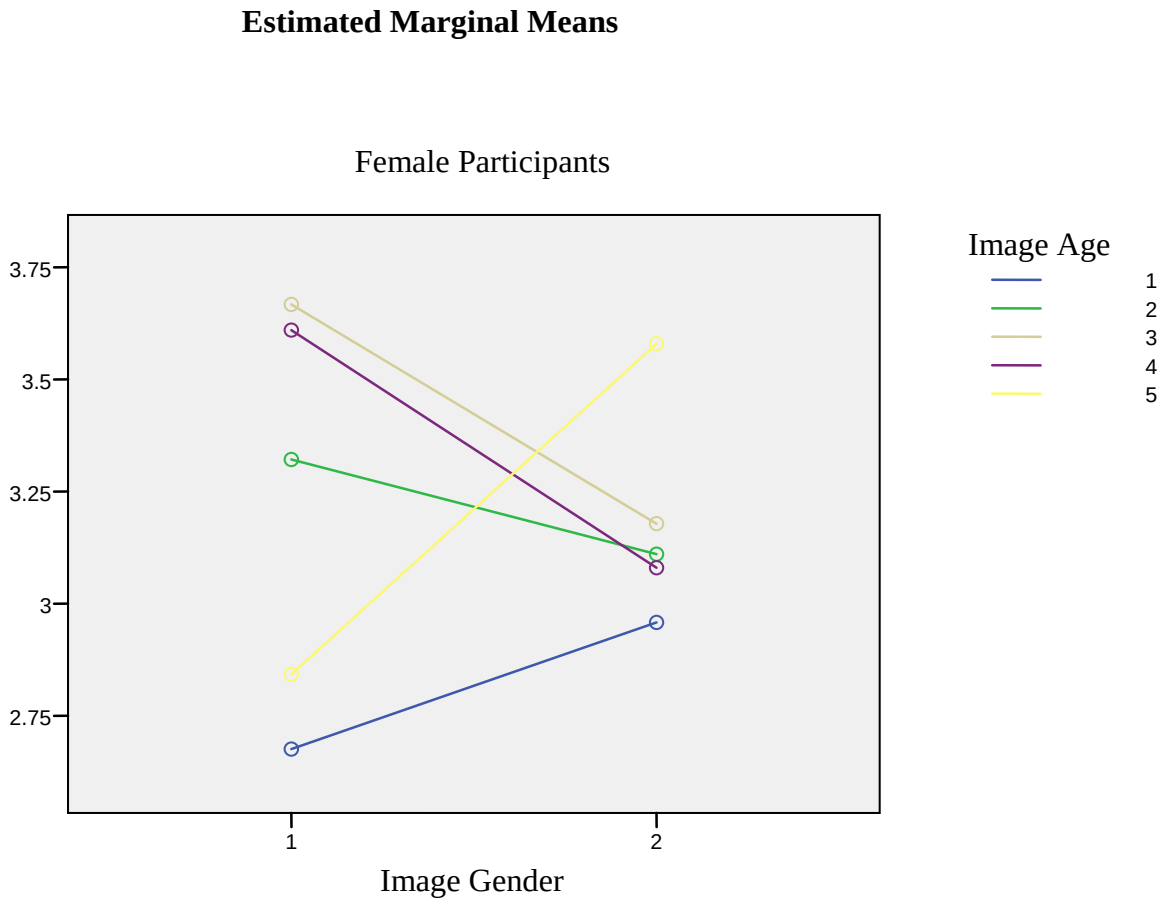
Source	Mean Difference (I-J) male/female children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	1.099	.478	.005*	-.020-1.872
Low Risk Females	.736	.437	.095	-.1.29-1.603
Male Non Sex Offenders	.380	.437	.386	.486-1.246
Rapist	.036	1.005	.927	2.207-1.955
Male Child sexual Offenders	.736	.768	.339	-.784- 2.257

*P<.05



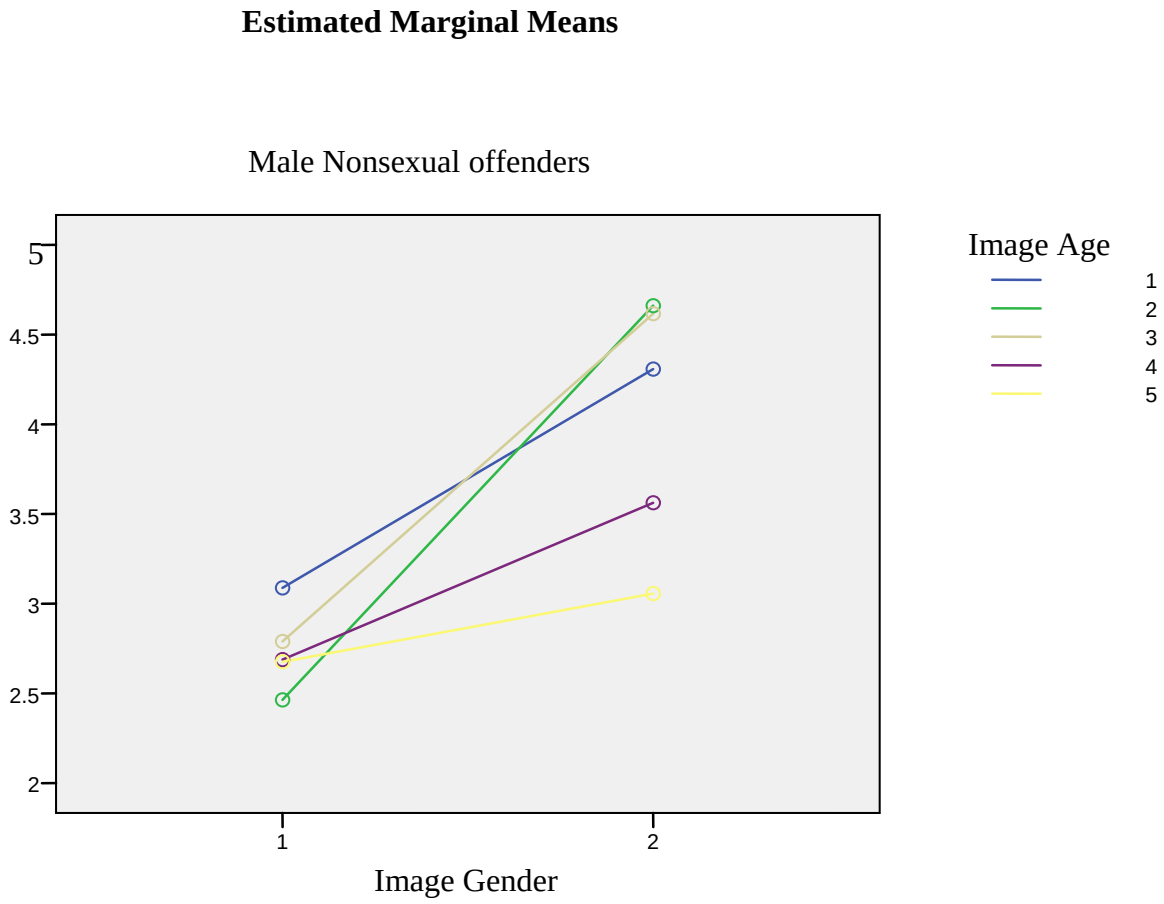
* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 15 Three- way interaction: Image Age x Image Gender x Male low risk participants (response times to images).



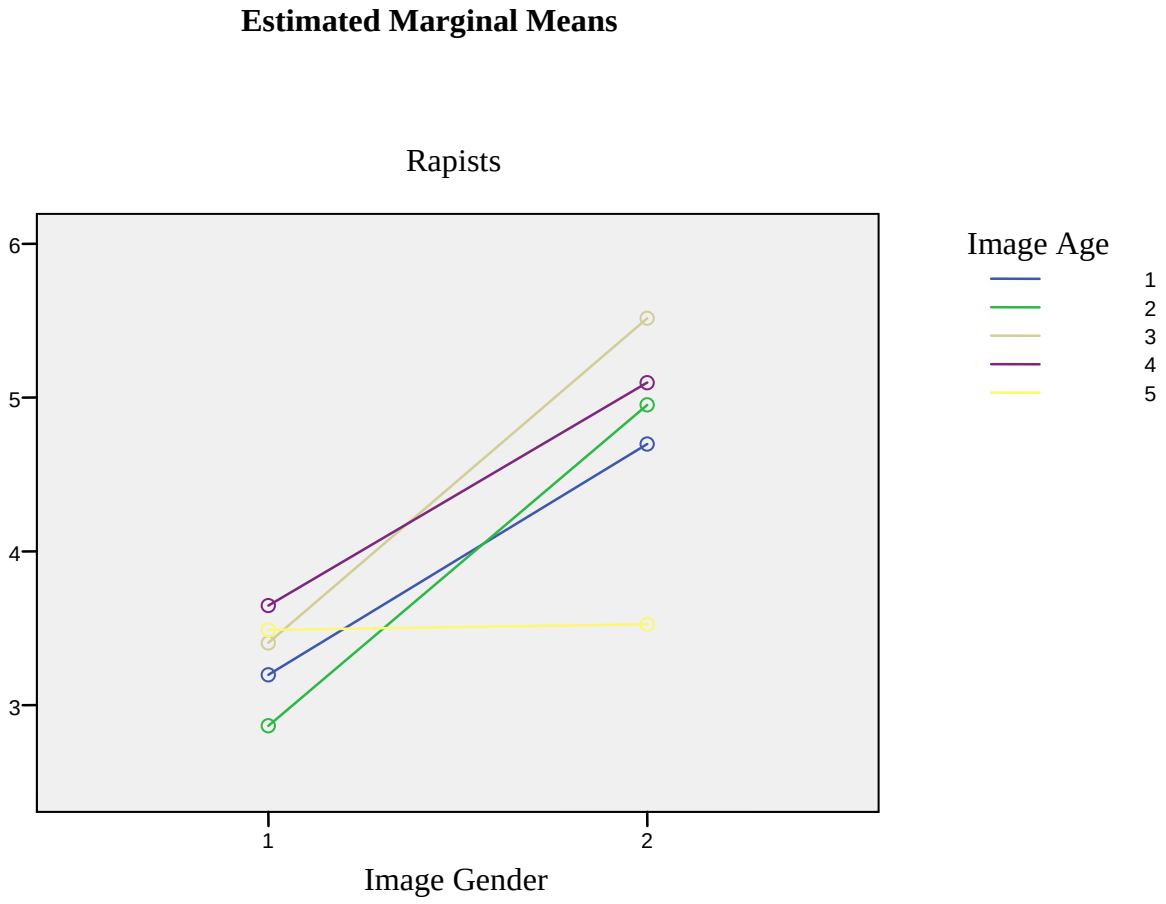
* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 16: Three-way interaction: Image Gender x Image Age x female participants (response times to images).



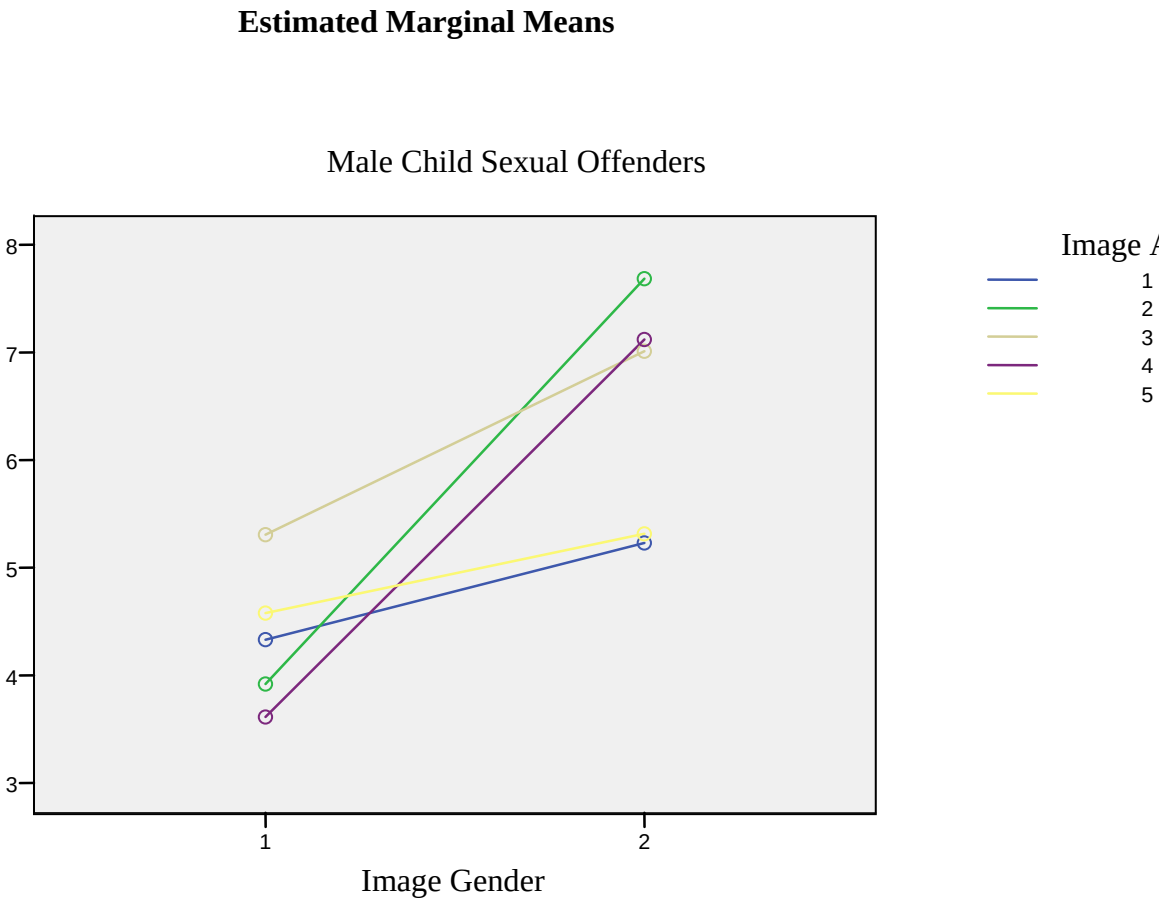
* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 17: Three-way interaction image gender x image age x male nonsexual offenders (response time to images).



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 18:Three-way interaction: Image gender x image age x rapists (response time to images).



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 19: Three-way interaction: image gender x image age x child sexual offenders (Response Times to images).

3.8 Move from Image Categories (Viewing Time)

The main effects of the gender of the image was significant (f=3.939, p=.049). The main effect of the age of the image was not significant (f=2.202, p=.068) (see table 67).

Table 67: Main Effects Viewing Time

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of the Image	17.735	1	17.735	3.939	.049*	.032
Age of the Image	38.487	4	9.622	2.202	.068	.018

*P<.05

The two-way interaction between the gender of the image x combined group/sex of participant was not significant (f=1.650, p=.166).The two-way interaction between the age of the image x combined group/sex of the participant was significant (f=2.477, p=.001). The two- way interaction between the age of the image x gender of the image was also significant (f=24.461, p=.001) (see Table 68).

Table 68: Two -way Interactions - Viewing Time

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of Image x combined group/sex of participant	29.727	4	7.432	1.650	.166	.053
Age of the image x combined group/sex of the participant	173.139	16	10.821	2.477	.001*	.077
Age of the image x gender of image	435.910	4	108.978	24.461	.000*	.171

*P<.05

Table 69 shows the three-way interaction between the age of the image x gender of the image x combined group/sex of the participant was significant (f=2.999, p<.0005).

Table 69: Three-way Interaction - Viewing Time

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age image x gender of image x combined group/sex of participant	213.762	16	13.360	2.999	.000*	.171

*P<.05

Tests of between subject's effects showed that the new combined group/sex of participant had a significant effect. (f=6.796, p<.0005) and (partial eta squared= .800) (see Table 70).

Table 70: Between Subjects Effects - Viewing Time

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Combined group/sex of participant	1560.823	4	390.206	6.796	.000*	.800

*P<.05

In the context of the viewing time of the different image categories, the significant three way interaction between the age of the image x gender of the image x combined group/sex of participant was further explored. (See figures 20- 24). Post Hoc Bonferroni tests showed the following. The low risk males viewed images of female children for longer (mean=6.357) than they did male children (mean=4.103) and this difference was found to be significant (see Table 71).

Table 71: Differences Viewing Time (male and female children)

Source	Mean Difference (I-J) male/female children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	2.253	.584	.000*	1.097-3.410
Low Risk Females	.478	.535	.373	-.581—1.537
Male Non Sex Offenders	1.723	.535	.002*	.664-2.782
Rapist	2.512	1.229	.043*	.078-4.946
Male Child sexual Offenders	2.222	.939	.020*	.363-4.081

*P<.05

Females in the low risk group viewed images of female children for longer (mean=4.654) than they did male children (mean=4.176) but this difference was not significant. The male nonsexual offenders viewed images of female children

(mean=6.159) for longer than they did male children (mean=4.436) and this difference was found to be significant. Similarly the rapist viewed images of female children for longer (mean=8.189) than male children (mean=5.677) and this difference was also found to be significant. The male child sexual offender too viewed images of female children for longer (mean=9.759) than male children (mean=7.537) this was also a significant finding.

Table 72 shows that males in the low risk group viewed pubescent males for longer (mean=4.648) than they did pubescent females (mean=4.211). This difference was not significant. Females of the low risk group viewed pubescent females for longer (Mean =5.233) than they did pubescent males (mean=4.511). This difference was not found to be significant* This difference became significant when the data was log transformed. Females of the low risk group viewed pubescent female images for significantly longer (mean=.685) than they did images of pubescent males (mean=.608)*. (See Appendix B Table 44).Of the males in the nonsexual offender group they viewed pubescent males (mean=5.721) longer than they did pubescent females (4.135). This difference was found to be significant. The rapist viewed pubescent males for longer (mean=6.685) than they did pubescent females (mean=6.213). This difference was not significant. The male child sexual offenders viewed pubescent males for longer (mean=7.663) than they did pubescent females (mean=6.280). Again this difference was found not to be significant.* this finding became significant when the data was log transformed* (See Appendix B Table 44).

Table 72: Differences Viewing Time (male and female pubescent images)

Source	Mean Difference (I-J) male/female pubescent images	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.437	.464	.348	-.482-1.355
Low Risk Females	.722	.425	.091	-1.118-1.563
Male Non Sex Offenders	1.586	.425	.000*	.745-2.427
Rapist	.472	.976	.630	.-1.461-2.404
Male Child sexual Offenders	1.383	.745	.053	-.021-2.932

*P<.05

Table 73 shows that amongst the category of young adult male and female images the following was found in the context of viewing time.

Table 73: Differences Viewing Time (male and female young adults)

Source	Mean Difference (I-J) male/female young adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	1.970	.575	.001*	-3.109-.832
Low Risk Females	.172	.526	.706	-.843-1.241
Male Non Sex Offenders	1.392	.526	.009*	.350-2.433
Rapist	1.839	1.210	.131	-.557-4.234
Male Child sexual Offenders	3.719	..924	.000*	.1.889-5.548

*P<.05

Males of the low risk group viewed young adult females (mean=5.790) for longer than they did young adult males (mean=3.819). This difference was significant. The females in the low risk group viewed young adult males longer (mean=4.825) than they did young adult females (mean=4.653). This difference was not significant. The males in the non sex offender group viewed young adult females for longer (mean=5.269) than they did young adult males (mean=3.878). This difference was significant. The rapist viewed young adult females for longer (mean=7.048) than they

did young adult males (mean= 5.209). This difference was not significant. The child sexual offenders viewed young adult females for longer (mean=10.374) than they did young adult males (mean=6.656). This difference was significant.

Table 74 illustrates that low risk males viewed adult males for longer (mean=5.678) than they did young adult females (mean=3.858). This difference was also significant. Females of the low risk group viewed adult males for longer (mean=5.001) than they did adult females (mean=4.467) this difference was not significant. Of the males in the nonsexual offender group they viewed adult males (mean=6.451) for longer than they did adult females (mean=4.071). This difference was significant. The rapist viewed adult males (mean=7.762) for significantly longer than they did adult females (mean=5.294) and the child sexual male offenders viewed adult males (mean=10.646) for significantly longer than they did adult females (mean=7.654).

Table 74: Differences Viewing Time (male and female adult images)

Source	Mean Difference (I-J) male/female Adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	1.82	.534	.001*	.762-2.877
Low Risk Females	.534	.489	.277	-.434-1.502
Male Non Sex Offenders	2.380	.489	.000*	1.412-3.348
Rapist	2.467	1.124	.030*	.242- 4.693
Male Child sexual Offenders	2.993	.859	.001*	1.293-4.692

*P<.05

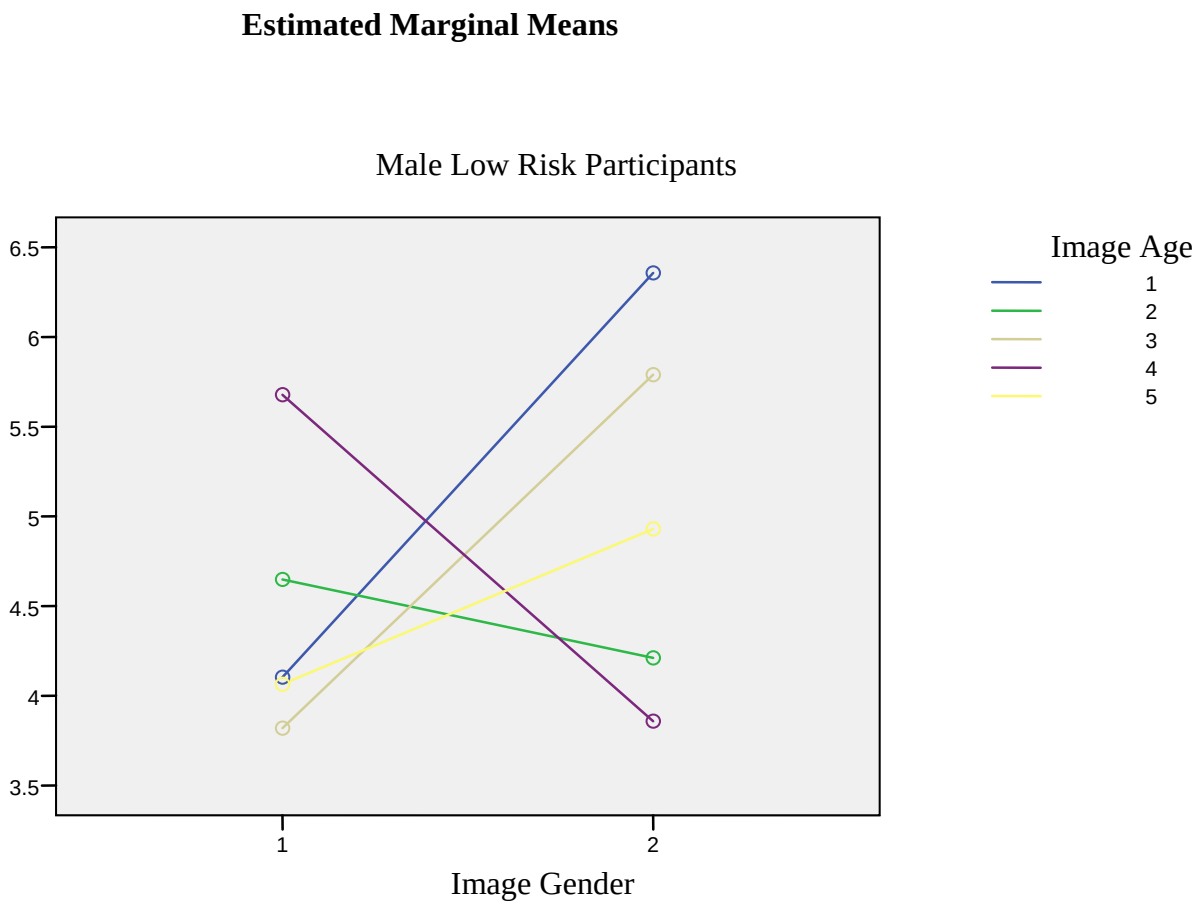
Table 75 shows that in the category of older males and females in the context of viewing time the following difference were found. The low risk males viewed old females (mean=4.930) for longer than they did old adult males (mean=4.064). This difference was found not to be significant. Females of the low risk group viewed older

adult males (mean=5.233) for longer than they did older adult females (mean=5.231). This difference was not significant. The males in the nonsexual offender group viewed older females for longer (mean=4.392) than they did older adult males (mean= 4.263). This difference was not significant. The rapist viewed older adult females (mean=5.662) for longer than they did older adult males (mean= 5.634). This difference was not significant. Finally, the male child sexual offenders viewed older adult females (mean=10.260) for significantly longer than they did older adult males (mean=8.315).* However when the data was log transformed this difference for the male child sexual offender was not significant (see Appendix B Table 47).

Table 75: Difference Viewing Time (male and female older adults)

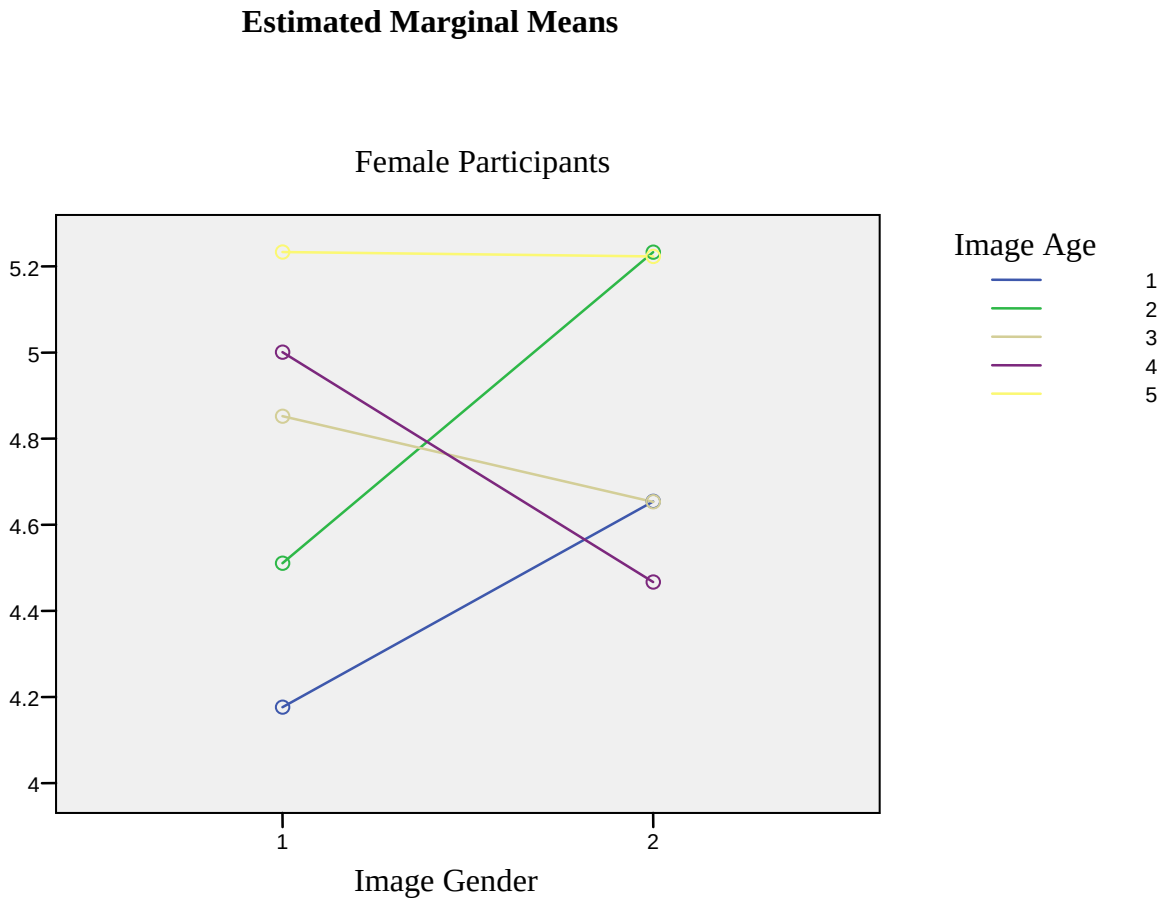
Source	Mean Difference (I-J) male/female Old Adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.865	.518	.097	-.160-1.891
Low Risk Females	.002	.474	.983	-.928-.948
Male Non Sex Offenders	.129	.474	.786	-.810—1.067
Rapist	.027	1.090	.980	-2.130-2.185
Male Child sexual Offenders	1.945	.832	.021*	.297-3.592

*P<.05



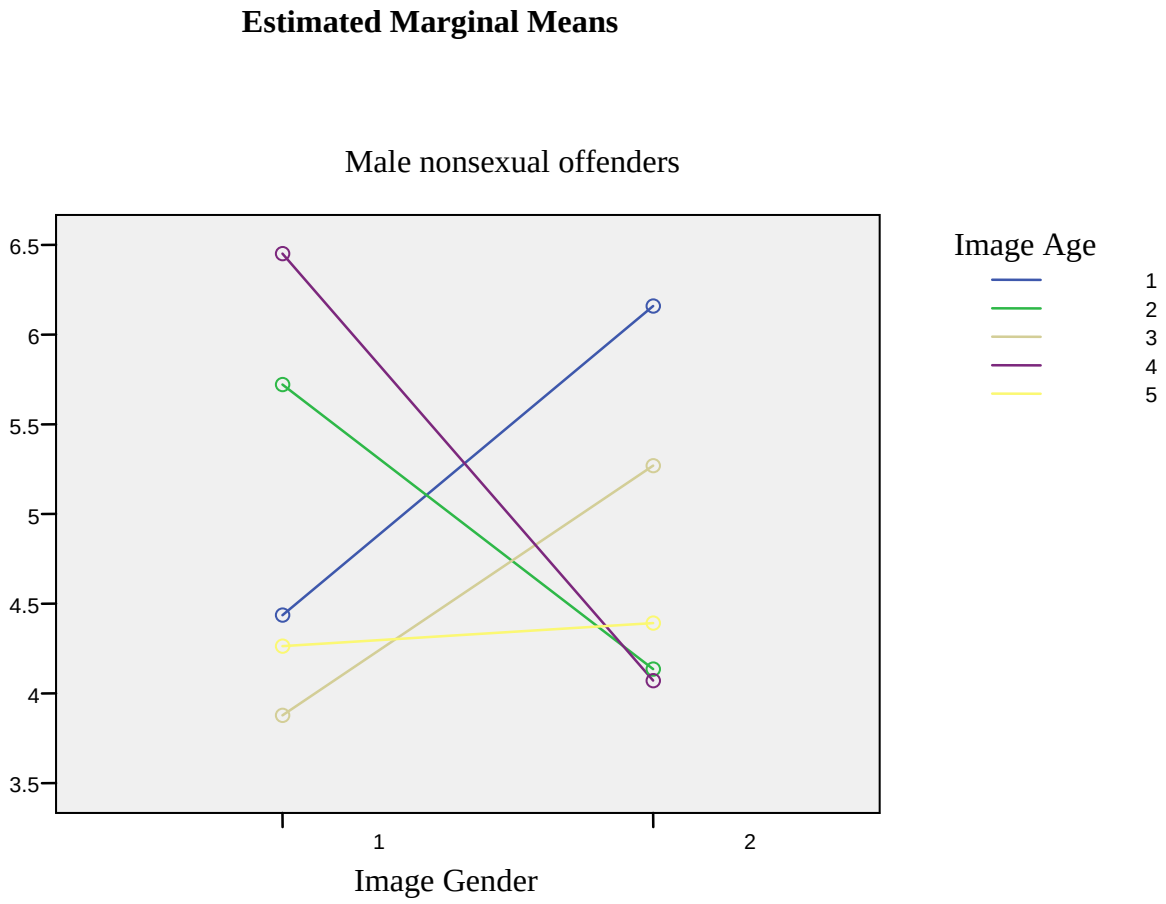
* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 20: Three-way interaction: Image Age x Image Gender x male low risk participants (viewing time).



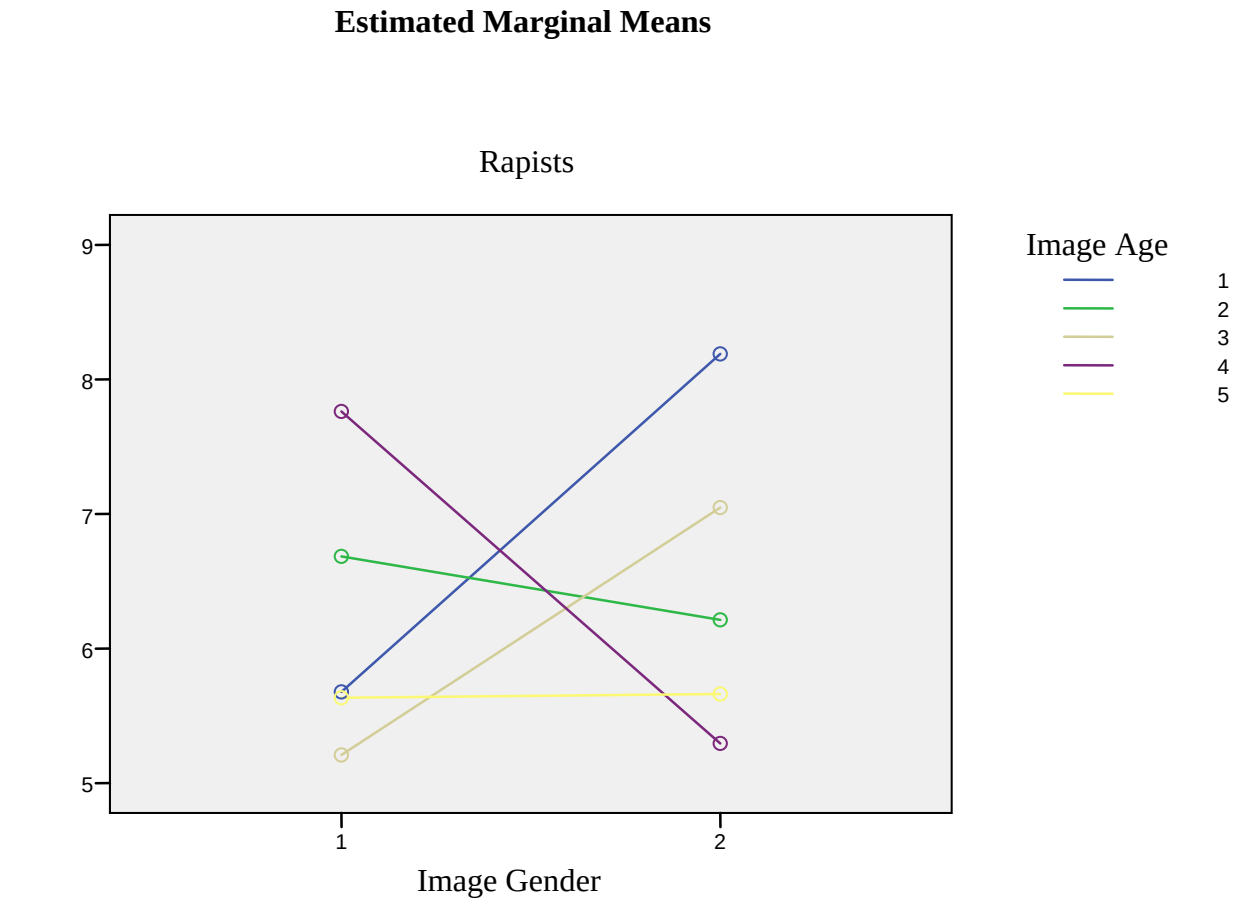
* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 21: Three-way interaction: Image Gender x Image Age x Female participants (Viewing Time).



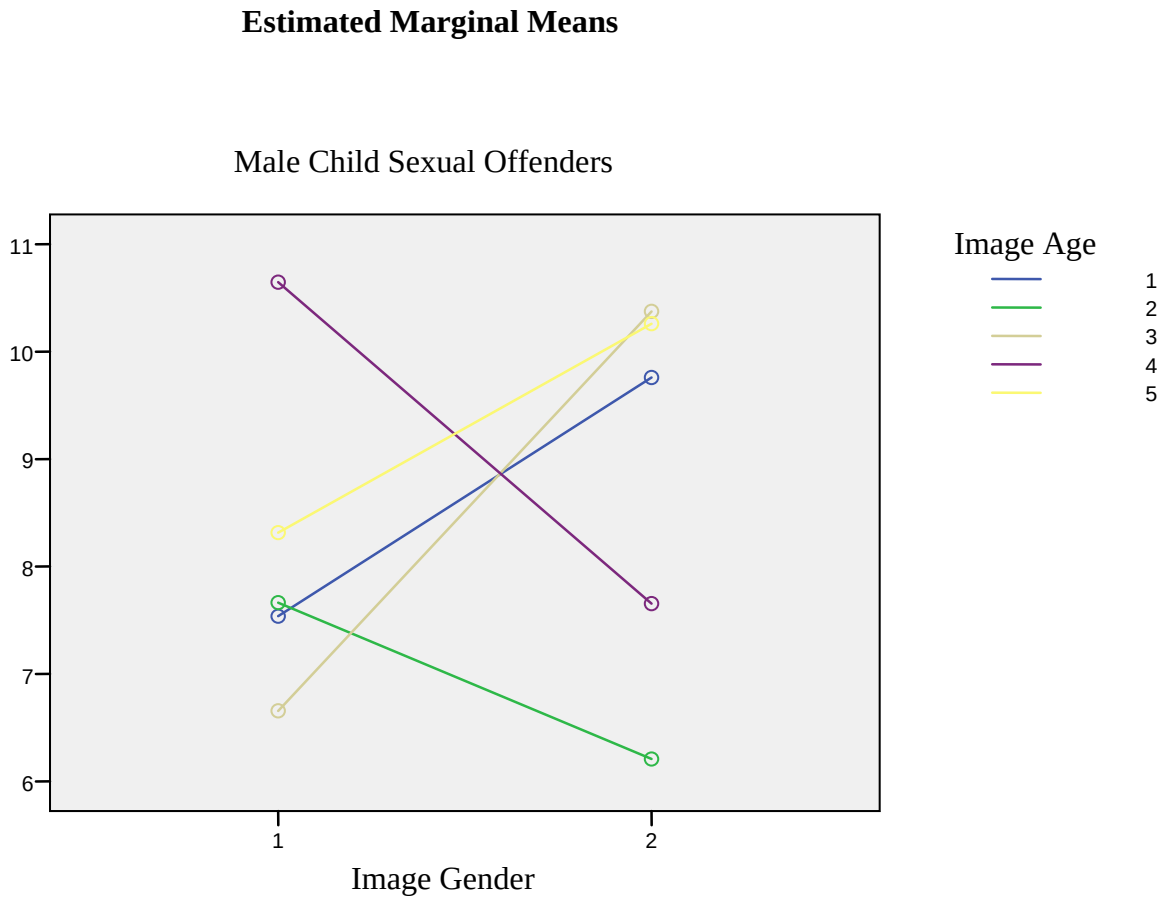
* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 22: Three-way interaction: Image Gender x Image Age x Male nonsexual offenders (viewing time)



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 23: Three-way interaction: image gender x image age x rapists (viewing time).



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 24: Three-way interaction: Image Gender x Image Age x Male Child Sexual Offenders (Viewing Time).

3.9 Attractiveness Ratings and the Image Categories

Tests of within subject effects showed that the gender of the image had a significant main effect (f=44.586, p<.0005). Table 76 shows the main effect of the age of the image was also significant (f=57.395, p<.0005). The two- way interaction between the age of the image and the combined group and sex of the participant had a

significant main effect (f=16.005, p<.0005).The two-way interaction between the age of the image x combined group and sex of the participant also had a significant effect (f=3.875, p<.0005). There was a significant interaction between the age of the image x gender of the image (f=19.828, p<.0005) (see Table 77). There was a significant three-way interaction between the age of the image x the gender of the image x combined group and sex of the participant (f=10.220, p<.0005) (see Table 78).

Table 76: Main Effects - Attractiveness Ratings

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of the Image	59.858	1	59.858	44.586	.000*	.273
Age of the Image	62.787	4	15.697	57.395	.000*	.325

*P<.05

Table 77: Two-way Interactions-Attractiveness Rating

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of Image x combined group/sex of participant	85.951	4	21.488	16.005	.000*	.350
Age of the image x combined group/sex of the participant	16.956	16	1.060	3.875	.000*	.115
Age of the image x gender of image	20.637	4	5.159	19.828	.000*	.143

*P<.05

Table 78: Three - way Interactions - Attractiveness Ratings

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age image x gender of image x combined group/sex of participant	42.547	16	2.659	10.220	.000*	.256

*P<.05

Tests of between subject effects showed that also in the context of attractiveness ratings the combined group x gender of the participant had a significant effect (f=2.789, p=.030). This can be seen in the table 79.

Table 79: Between Subject Effects

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Combined group/sex of participant	36.383	4	9.096	2.789	.030*	.427

*P<.05

In the context of attractiveness ratings the significant three-way interaction found between the ages of the image x gender of the image x combined group and sex of participant was explored. Bonferroni post hoc tests revealed the following differences. (See figures 25-29).Males of the low risk group rated female children (mean=.258) as significantly more attractive than male children (mean=.005). Females in the low risk group rated females children (mean=.211) as more attractive than male children (mean=.095). This difference was not found to be significant. Males in the nonsexual offender group rated female children (mean= .762) as significantly more attractive than male children (mean=.500). The rapist rated female children (mean=.514) as more attractive than male children (mean=.190). This difference was not found to be significant. The male child sex offender rated female children (mean=.633) as significantly more attractive than male children (mean =.181) (see Table 80).

Table 80: Differences Attractiveness Ratings (male and female children)

Source	Mean Difference (I-J) attractiveness rating male/female Children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.253	.092	.077	.071-.435
Low Risk Females	.116	.084	.169	-.050-.283
Male Non Sex Offenders	.262	.084	.002*	.096-.429
Rapist	.324	.193	.096	.-.059-.706
Male Child sexual Offenders	.453	.148	.003*	.161-.745

*P<.05

Table 81 illustrates, the males in the low risk group rated pubescent females (mean= 1.432) as significantly more attractive than pubescent males (mean=.056). The females in the low risk group rated pubescent males (mean=.574) as more attractive than pubescent males (Mean =.459). This difference was not found to be significant. Males in the nonsexual offender group rated female pubescent images (mean=2.054) as significantly more attractive than pubescent males (mean=.541). The rapist rated pubescent females as significantly more attractive (mean= 1.475) as more attractive than pubescent males (mean=.393). The male child sexual offenders rated female pubescent images as significantly more attractive (mean=1.600) than pubescent male images (Mean=.188).

Table 81: Differences Attractiveness Ratings (male/female pubescent images)

Source	Mean Difference (I-J) attractiveness Ratings male/female pubescent images	Std. Error	Sig	95% Confidence Interval
Low Risk Males	1.376	.212	.000*	.956-1.796
Low Risk Females	.115	.194	.555	-.269-.499
Male Non Sex Offenders	1.514	.194	.000*	1.129-1.898
Rapist	1.064	.446	.019*	.181-1.948
Male Child sexual Offenders	1.412	.341	.000*	.738-2.087

*P<.05

Males in the low risk group rated young adult females as significantly more attractive (mean=1.318) than young adult males (mean=.270). Females in the low risk group rated young adult males as significantly more attractive (mean=1.396) than young adult females (mean=.490). Males in the nonsexual offender group rated young adult females (mean=2.039) as significantly more attractive than young adult males (mean=.531). The rapist rated young adult females as significantly more attractive (mean=1.551) than young adult males (mean=.377). The male child sexual offender rated young adult females as significantly (mean=1.357) than young adult males (mean=.114) (see Table 82).

The males in the low risk group rated adult females as significantly more attractive (mean=.724) than adult males (mean=.280). The females in the low risk group rated the adult males (mean= 1.198) as significantly more attractive than adult females (mean=.255). The males in the nonsexual offender group rated adult females as significantly more attractive (mean=.923) than adult males (mean=.468). The rapist rated the adult females as more attractive (mean=.633) than adult males (mean=.238). This difference was not found to be significant. The male child sexual offenders rated adult females as significantly more attractive (mean=1.202) than adult males (mean=.111) (see Table 83).

Table 82: Differences Attractiveness Ratings (male/female young adult images)

Source	Mean Difference (I-J) attractiveness ratings male/female Young Adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	1.048	.239	.000*	.575-1.522
Low Risk Females	.905	.219	.000*	.427-1.339
Male Non Sex Offenders	1.508	.219	.000*	1.075-1.941
Rapist	1.174	.503	.021*	.178-2.171
Male Child sexual Offenders	1.213	.384	.002*	.452-1.974

*P<.05

Table 83: Differences Attractiveness Ratings (male/female adult images)

Source	Mean Difference (I-J) attractiveness rating male/female Adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.444	.174	.012*	.099-.788
Low Risk Females	..943	.159	.000*	.628-1.259
Male Non Sex Offenders	.454	.159	.005*	.139-.770
Rapist	.395	.366	.283	.-330-1.120
Male Child sexual Offenders	1.091	.280	.000*	.538- 1.645

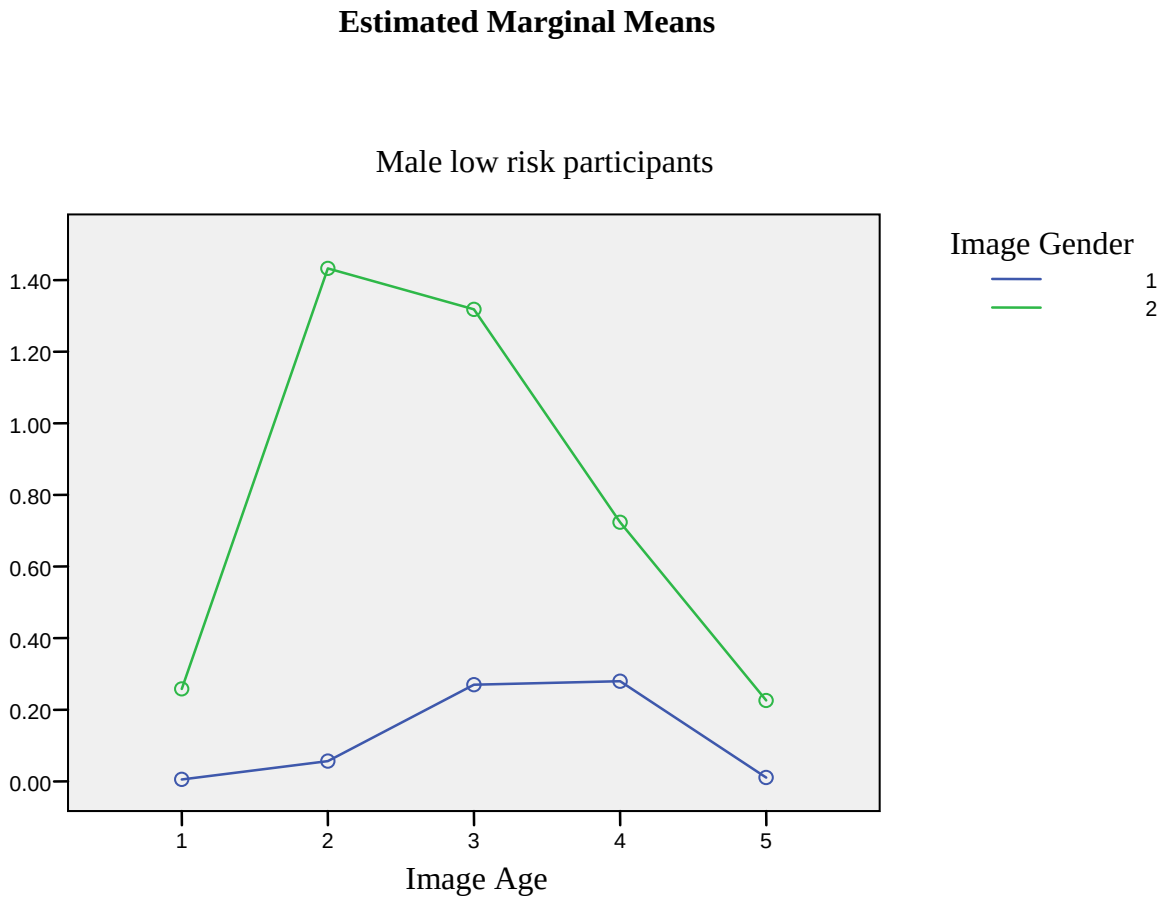
*P<.05

In the final category of the older adult, the following differences were found amongst the groups and the male and female participants. The males in the low risk category rated old females (mean=.226) as more attractive than old males (mean=.001) see Table 82). This difference was not significant. The females in the low risk group rated old females as more attractive (mean=.095) than old males (mean=.081). This difference was not significant. Males in the non sexual offender group rated old females (mean=.527) as significantly more attractive than old males (mean=.270). The rapists rated the old females as more attractive (mean=.357) than old males (.095). This difference was not significant. Finally, the male child sexual offender rated the old female (mean=.792) as significantly more attractive than the old male images (mean=.017) (see Table 84).

Table 84: Differences Attractiveness Rating (male/female older adult images)

Source	Mean Difference (I-J) Attractiveness rating male/female older adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.215	.114	.061	-.010-.441
Low Risk Females	..014	.104	.897	-.193-.220
Male Non Sex Offenders	.257	.104	.015*	.050-.463
Rapist	.262	.240	.277	.-.213 -.736
Male Child sexual Offenders	.792	.183	.000*	.429-1.154

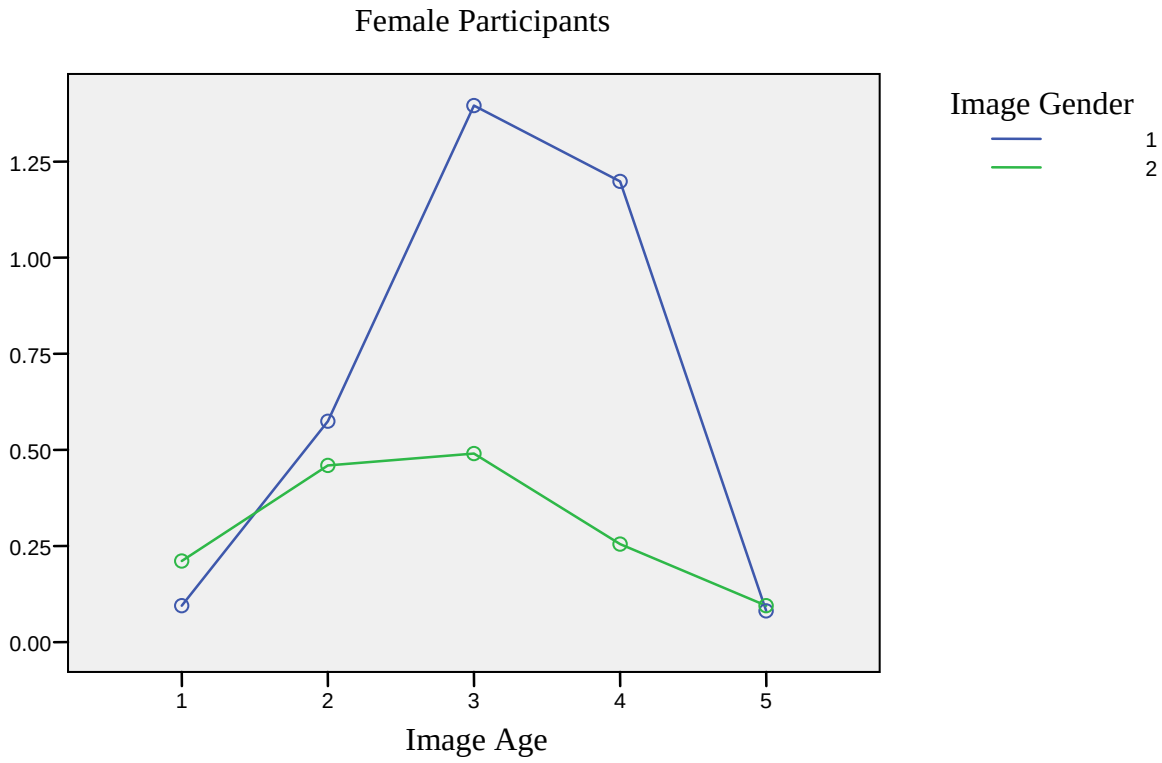
*P<.05



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

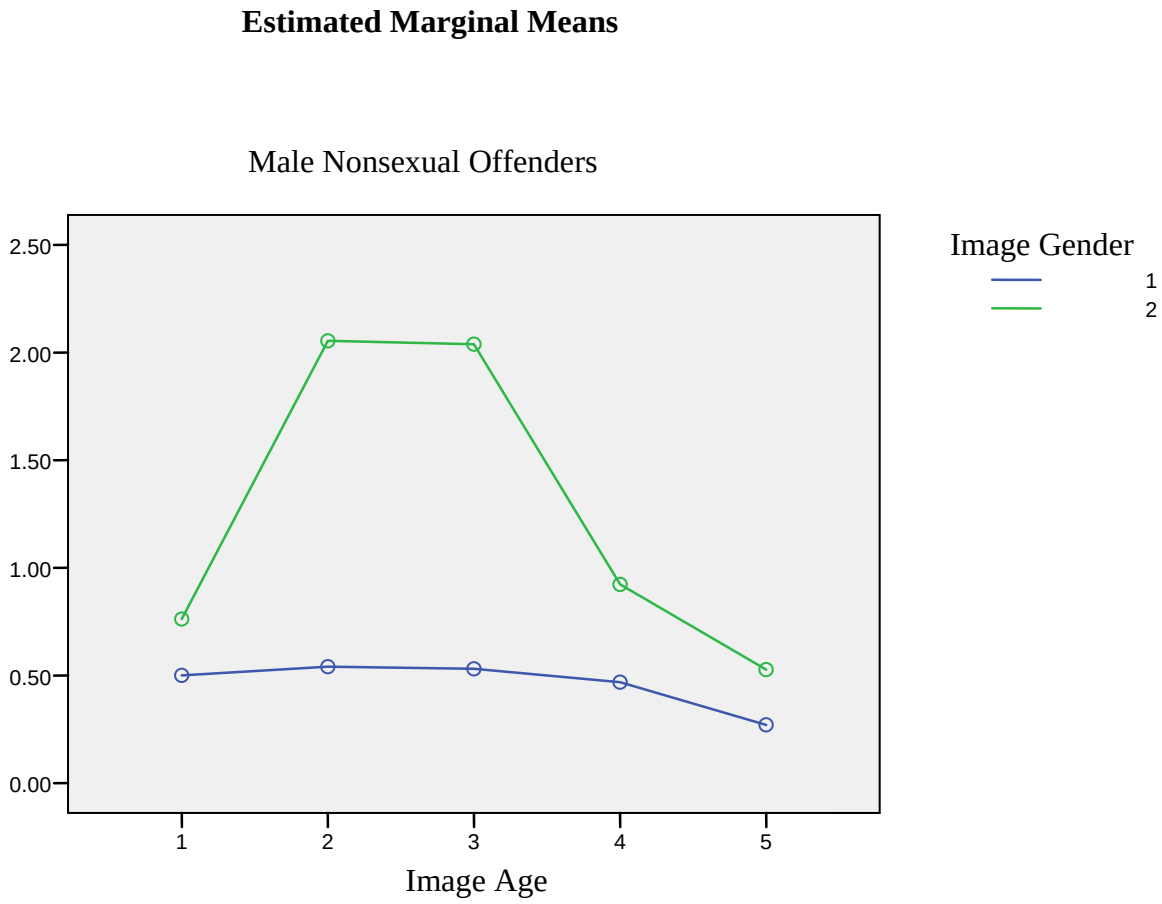
Figure 25: Three-way interactions: image gender x image age x male low risk participants. (attractiveness ratings).

Estimated Marginal Means



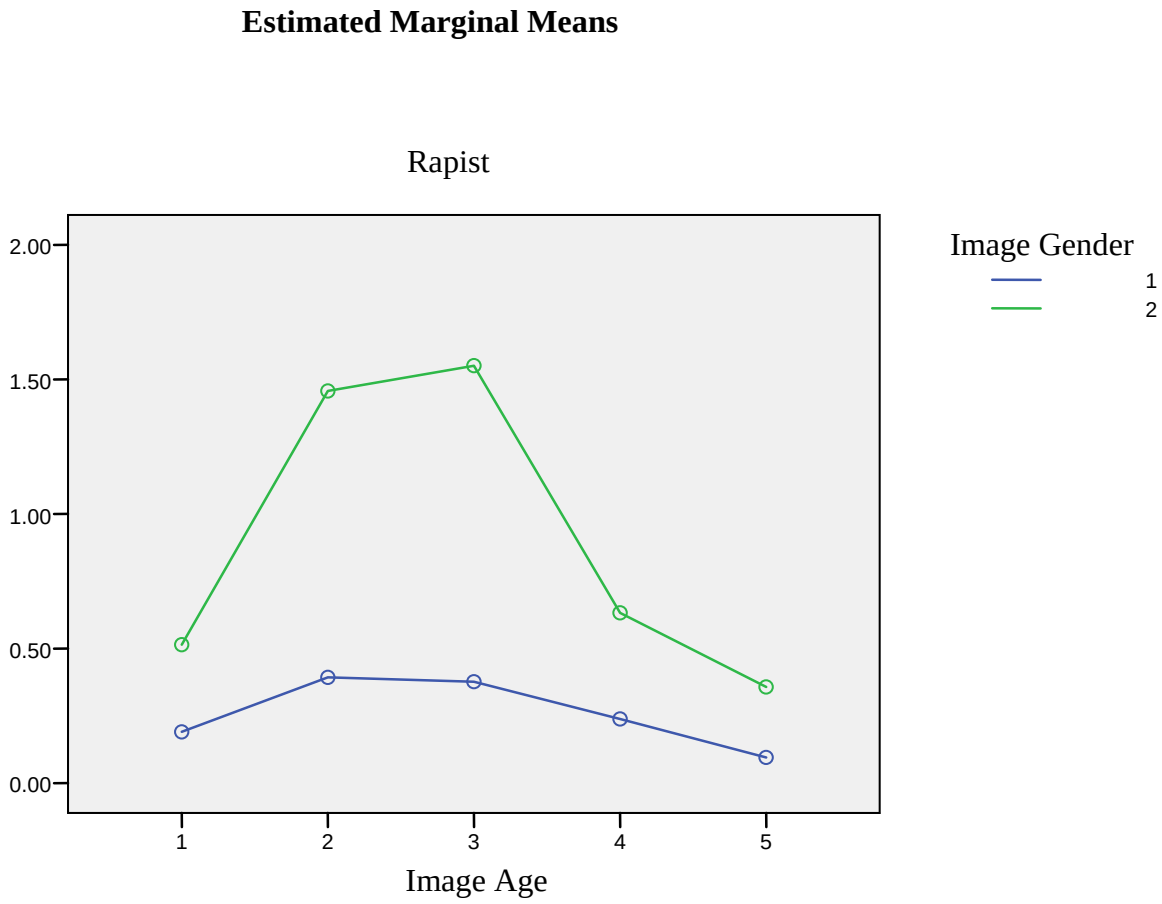
* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 26: Three-way interaction: image age x image gender x female participants (attractiveness ratings).



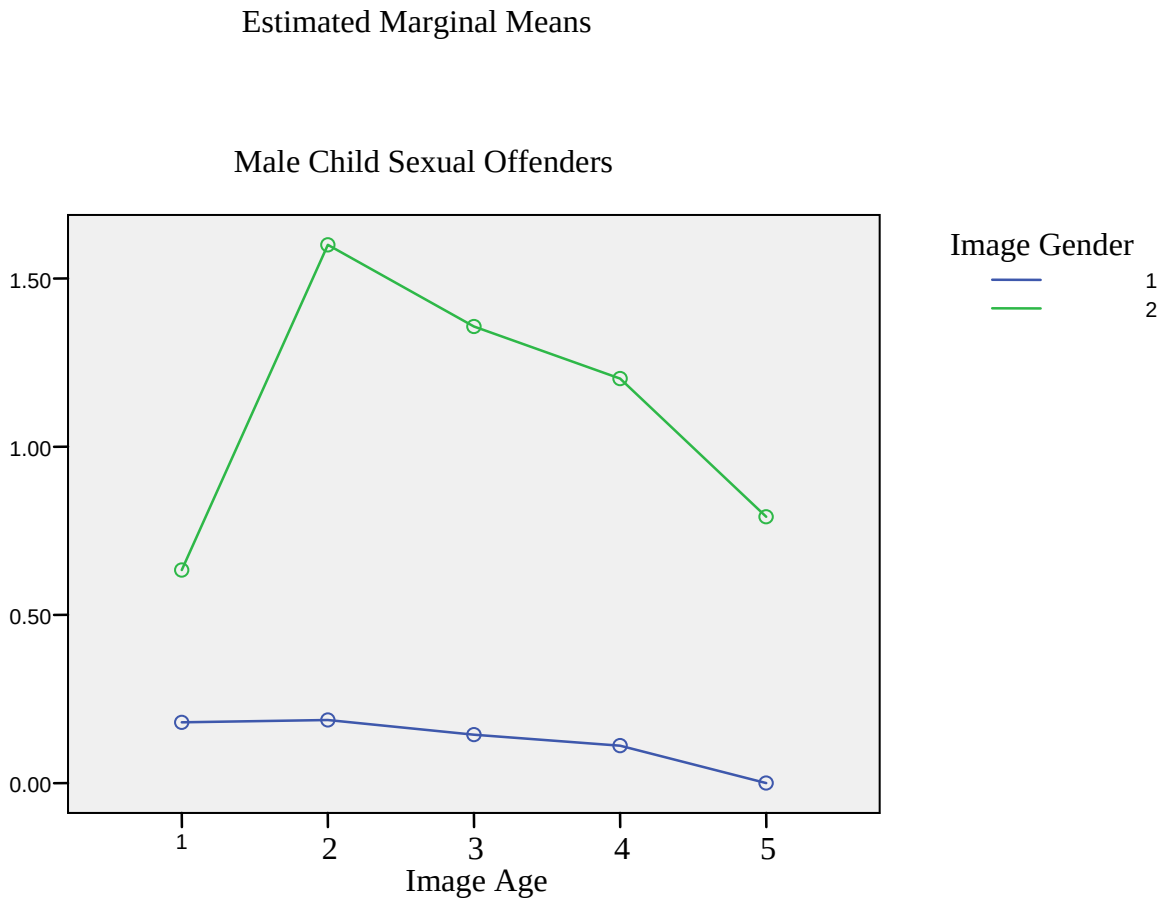
* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 27: Three-way interaction: image age x image gender x male nonsexual offenders (attractiveness ratings).



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 28: Three-way interaction: Image age x image gender x rapists (attractiveness ratings).



* Image age (1=child, 2=pubescent, 3=young adult, 4= adult, 5=old adult).
* Image Gender: 1=Male, 2=Female

Figure 29: Three-way interaction: image age x image gender x male child sexual offenders (attractiveness ratings).

3.10 Discussion

As expected, child sexual offenders viewed images of children and pubescent images for longer than did the low risk groups. The hypothesis proposing that the rapist would view adult females for longer than males was not supported. It was found that the rapist viewed adult males for significantly longer than they did adult females. Males of the low risk group viewed young adult females for significantly longer than they did

young adult males but they viewed adult males for longer than they did adult females. Similarly for the nonsexual offenders they viewed young adult females for significantly longer than they did young adult males, however like the low risk males, the nonsexual offenders also viewed adult males for longer than they did adult females. It was expected that the female sample would view young adult and adult males for longer than young adult and adult females. This hypothesis was not supported.

It was expected that males in the low risk sample would view pubescent females for longer than males, this was not supported. It was also expected that females would view pubescent male images for longer than female images. However it was found that females spent longer viewing pubescent female than pubescent male images. Another finding that was not supported was that the male nonsexual offenders would take longer to view pubescent female over male images. It was noted that this sample spent significantly longer viewing male pubescent images. The male child sexual offender spent significantly longer times viewing pubescent male over pubescent female images. It was proposed that viewing time should correlate with ratings of sexual attractiveness. This hypothesis was supported for the child sexual offenders.). It was noted that amongst the male child sexual offenders viewing time correlated with ratings of sexual attractiveness for images of male children. This hypothesis was also supported for female sample, where viewing time correlated with ratings of sexual attractiveness given to the image block of young adult males and adult males. It was also supported when examining the rapist sample. Viewing time correlated with ratings of sexual attractiveness given to adult female images by the rapists. However, there were significant findings also illustrating that this hypothesis was not supported. Amongst the

female participants viewing time correlated with ratings of sexual attractiveness for images of male and female children. VT correlated with sexual attractiveness ratings amongst low risk males on the images of pubescent males and on the images of pubescent females amongst the female participants. Another unexpected result was that amongst the male low risk sample VT correlated with ratings of sexual attractiveness on images of young adult and adult males. It also correlated with attractiveness ratings on the image block of young adult females amongst the female participants. Viewing time correlated with ratings of sexual attractiveness on the image block of old adult male images amongst the female sample and amongst the low risk male sample, viewing time correlated with ratings of sexual attractiveness for old female images.

Of interest in the viewing time paradigm was the time to respond to each of the categories of image blocks (children, pubescent, young adult, adult and old adult images), the time taken to view the images and the attractiveness ratings given to each of the categories of images. The amount of time spent viewing any given picture is believed to provide an objective measure of sexual interest; longer viewing time suggests greater interest (Abel et al., 1994; Abel, Huffman, Warberg, & Holland, 1998; Abel, Jordan, Hand, Holland, & Phipps, 2001). In light of this, it was expected for example that child sexual offenders would take longer to respond to and view images of children than would the low risk population. Based on Evolutionary Theory of Mate Preferences (Symons, 1979), the following was expected. Males and females view pictures and images of young adults of the opposite sex longest. Males should look at images of pubescent females longer than females look at pubescent males. Based on the hypothesis that unobtrusively measured viewing time reflects sexual interest, it was

predicted that viewing times should correlate with ratings of sexual attractiveness (Quinsey & Ketsetzis 1996).

In the context of the response time to images the following was found. In each of the five categories of images it was found that males viewed females for significantly longer than they did males with the exception of old females. Males viewed female children, female pubescent images, female young adults and female adults for significantly longer than males. Some of these findings are supportive of those proposed by (Quinsey, Ketzetis, Earls, & Karamanoukian 1996) in relation to males. They hypothesize that males should look longer at pubescent female images. According to Evolutionary Theory of Mate Preferences (Symons 1979), males and females view pictures and images of young adults of the opposite sex longest.

With respect to the image block of children, the only significant finding was that male nonsexual offenders took significantly longer to respond to images of female children. Interestingly, the male in the nonsexual offender group also took significantly longer to respond to female pubescent images.

It was found that the rapist, the low risk male and the child sexual offender took significantly longer to respond to pubescent female images than male images. Two points need to be considered here. Firstly, according to the Evolutionary Theory of Mate Preferences (Symons, 1979), it is proposed that males will naturally view pubescent females for longer than they will pubescent males. Secondly, if viewing time is an objective measure of sexual interest, one must consider the possibility of crossover rate and overlap in offence histories when considering sexual offenders. Several studies suggest that many offenders commit crimes of child molestation and rape (Heil,

Ahimeyer, Simons, & English, 2003; O' Connell, 1998; Weinrott & Sailer, 1991). Therefore, it possible that the significant longer viewing time of pubescent females is not only a natural tendency for males, but may also be influenced in this study, by potential crossover rates with rapists and child sexual offenders. Typologies illustrate the diversity in sex offenders—the victims they select, their varying motivations to sexually offend, their patterns of offending, and the specific kinds of issues that seem to underlie or drive their offending. However not all sex offenders may fit neatly into any one typology and may require interventions that are unique to each offender. Kleban, Chesin, Jeglic and Mercado (2012) also question the cross over rate in the selection of victims concerning sexual offenders. This however is a broad assumption to make. As was just pointed out this may be nothing more than the proposed evolutionary theory, that males will naturally view pubescent females longer than they will pubescent males therefore the viewing time measure may not necessarily be detecting sexual preferences.

In the category of young adults, the nonsexual offender, the rapist and the child sexual offenders took significantly longer to respond to female images. The males in the nonsexual offender group took significantly longer to respond to adult females as did the male child molester. Males of the low risk group also took significantly longer to view images of young adult and adult females over males. Again in light of these findings from the low risk males, according to Symons (1979) evolutionary theory of mate preference, males should view young females of the opposite sex for the longest. However, males in this category also took significantly longer to respond to female old images than they did male old images. In summary, of response time to images by all of the male participants, it can be seen that in each category the female images took

significantly longer to respond to than did the male images.

Amongst the females of the low risk group the following was found. Females took significantly longer to respond to images of young adult males and adult males than they did females. This finding was expected. According to Evolutionary Theory of Mate Preferences (Symons, 1979), males and females view pictures and images of young adults of the opposite sex longest. It was found that females also viewed older females for significantly longer than they did older males. This links to a study proposed by Israel and Strasberg (2009). These researchers assessed viewing as a measure of sexual interest in self identified heterosexual men and women. Participants rated sexual appeal of sexually provocative photos, within viewing time being unobtrusively measured. They also found that females viewed same sex pictures significantly longer than did men. As is noted above most of the significant differences found in relation to response time to the image blocks are documented for the males. This finding may also link to the findings of the aforementioned author who suggest that when viewing time was used they found that men's sexual interest is more strongly category specific than is the sexual interest of women. This point was also noted by Jones (2012) who suggests that women have a much less category-specific pattern of visual attention to erotic stimuli than do men. When simultaneously presented with male and female erotic stimuli, heterosexual women focus much more evenly to both male and female erotic stimuli than do heterosexual men, who focus almost exclusively to female stimuli. Though one could argue in this case that the stimulus images were not erotic in nature it may explain to a degree the above mentioned findings.

3.10.1 Group Differences. As was expected the Child Sexual Offenders took

longer to view images of children than did the low risk population. This finding was significant and is supported by existing literature on the viewing time paradigm. Viewing time has been described as a valuable method to unobtrusively measure male sexual interest (Harris, Rice, Quinsey, & Chaplin, 1996). This point is also supported by the work of Abel et al., (2004) who noted that the amount of time male child molesters view slides of children was significantly longer than other groups. Harris et al. (1996) also found significant between-group discrimination in that the proportion of overall viewing time to child images greater for child molesters than non offending groups. A study by Giotakos (2006) found that in their viewing time measure child molesters also took significantly longer than other groups to view images of female children. The amount of time spent viewing any given picture is believed to provide an objective measure of sexual interest; longer viewing time suggests greater interest (Abel et al., 1994; Abel, Huffman, Warberg, & Holland, 1998; Abel, Jordan, Hand, Holland, & Phipps, 2001).

In the category of pubescent images, it was found that child sexual offenders took longer to view these images than did the low risk group. These differences between groups were expected when considering that the amount of time spent viewing an image may provide an objective measure of sexual interest.

Child Sexual Offenders took longer to view images of young adults, adults and older adults longer than the low risk sample and the nonsexual offender sample. This highlights the question as to whether the viewing time measure is a robust measure to explore sexual interest amongst a sexual offender population. Essentially, the rationale underlying the test is that clients will look longer at pictures they find sexually attractive

and that a summary profile of their viewing time will show this attractiveness versus unattractiveness differential (Laws & Gress, 2004, p184). The literature points to the following ideas and in this case may help in understanding significant group differences between the Child Sexual Offenders and other groups that were not anticipated or expected. Harris et al. (1996) suggest that the viewing time procedure may include fully clothed, partially clothed or nude images and the images may include a person who may erotically pose. In this viewing time study all images were fully clothed. This may help to understand the non expected group differences. For example, Harris et al. (1996) propose the notion that sexually non explicit materials may be less effective at predicting sexual preference as it elicits limited variability between the groups. This appears to be the case in this study. Other researchers also support this finding. For example, Ware, Brown, Amorsa, Pilkey and Presusse (1972) suggest that as content becomes more explicit viewing time increases. Research to date has also noted that people with different degrees of sex guilt displayed different patterns of Viewing Time as the explicitness of the images increased (Love, Sloan, & Schmidt, 1976). This would suggest that the use of nude images in the viewing time measure or indeed images of a more explicit nature could have proved more effective in pinpointing specific sexual interests. Rice and Chaplin (1994) demonstrated that discrimination between sex offenders and non sex offenders is enhanced by the use of brutal and coercive stimuli, specifically when dealing with rapists or sexual sadists. The use of such images in discerning individuals with paedophilic, violent, or other deviant sexual interests raises ethical as well as legal concerns. This finding is supported by Love, Sloan and Schmidt (1976). In their viewing time measure they showed slides (LT=Looking Time) of a

dressed couple entering a room. They found LT =11.8, for a slide of a male stimulating female genitals and breasts and cunnilingus LT = 20.2 However, the viewing time paradigm is impacted by ethical and legal problems in relation to its use of explicit images.

There was a significant interaction found between the gender of the image the age of the image and the sex of the participant. It was found that males viewed female children for significantly longer than male children. Males viewed images of pubescent males for significantly longer than they did pubescent females. In the context of the male participant and pubescent images this finding was not expected. Males should look at images of pubesescent females longer. This was the opposite of what was proposed by the Evolutionary Theory of Mate Preference (Symons, 1979).

Males viewed young adult females for significantly longer than they did young adult males. Males viewed adult males for significantly longer than adult females. Again this was an unusual finding as it was expected that males would view adult females for longer than adult males. According to Symons (1979), males and females view pictures and images of young adults of the opposite sex longest. In this study, further analysis indicated that the males in the low risk sample viewed images of female children for significantly longer than male children. It was expected that the low risk males would view young adult females for significantly longer than they did young adult males. However, it was found that a low risk sample of heterosexual males took significantly longer to view adult males than they did adult females. This finding again draws attention to the utility of the measure in detecting sexual preference. Perhaps as was pointed out above the images may need to have been more explicit in nature in

order to differentiate specific sexual preferences.

The male nonsexual offender, the rapists and the child sexual offenders all viewed images of female children for significantly longer than they did male children. Amongst this group it was also found that the nonsexual offenders viewed images of pubescent females for significantly longer than they viewed pubescent males. It was found that the male nonsexual offenders viewed young adult females for significantly longer than they did young adult males and they viewed adult males for significantly longer than they did adult females. However, it was unexpectedly found that the rapist viewed young adult males for significantly longer than they did young adult females. The child molesters viewed images of pubescent males for significantly longer than they did pubescent females. The child sexual offenders viewed young adult females for significantly longer than they did young adult males. Finally, they viewed adult males for significantly longer than they did adult females.

The only significant difference found amongst the low risk females was that they viewed images of pubescent females for significantly longer than pubescent males. This finding is the opposite of that proposed by Symons (1979) who suggests that people will look at opposite sex pubescent individuals for longer. In the context of viewing time it would appear again similar to response time to images that with the males more significant differences emerged across the categories of images presented than did females. Three points need to be highlighted here. Firstly, the utility of the viewing time measure is determining sexual preference is questionable. However, the findings may illustrate that men’s sexual interest is more strongly category specific than is the sexual interest of women (Israel & Strasberg, 2009). Finally, if the content of the images were

to be made more explicit, the viewing time measure may be more effective in pinpointing specific sexual interests.

3.10.2 Attractiveness ratings and the Image Categories. Results also showed the group to be significant in relation to the attractiveness ratings given to the images. The non sexual offenders rated children as significantly more attractive as did the low risk group. It was also noted that nonsexual offenders rated pubescent images as significantly more attractive as did the low risk group. The nonsexual offenders also rated young adults as significantly more attractive than the low risk group. There were no other significant differences found between the groups for the other categories of images (adults and old adults) in relation to attractiveness ratings.

Males in the nonsexual offender group rated female children as significantly more attractive than male children. Males in the nonsexual offender group rated female pubescent images as significantly more attractive than pubescent male's images and they rated adult females as significantly more attractive than adult males. The rapist rated pubescent females as significantly more attractive than pubescent males. The male child sexual offenders rated female pubescent images as significantly more attractive than pubescent male images and also rated adult females as significantly more attractive as adult males. The child sexual offender rated the old females as significantly more attractive than the old male images. Interestingly, for the group of all male sexual offenders, it can be seen that the female images right across the entire image categories are rated as more attractive than the male images. The males in the low risk group rated pubescent females as significantly more attractive than pubescent males. The same was found for the low risk male. Males in the low risk group rated young adult females as

significantly more attractive than young adult males The males in the low risk group rated adult females as significantly more attractive than adult males.

The following were the only significant differences found for the females. The females rated young adult males as significantly more attractive than young adult female's and they rated adult males as significantly more attractive than adult females. In light of the research documented above and based on the evolutionary theory of mate preference as outlined by (Symons 1979), these ratings of attractiveness provided by the low risk females were expected.

3.10.3 Correlations between viewing time and attractiveness ratings.

Correlations were found between the attractiveness rating given to the images and the amount of time spent viewing the images. This finding links to published work in this area. The literature in this domain suggests that there should be a correlation between viewing time and sexual attractiveness and ratings. (Quinsey, Ketzetis, Earls, & Karamoukian, 1996). It was noted that amongst the male child sexual offenders viewing time correlated with ratings of sexual attractiveness for images of male children. This finding was expected. (Schmidt, Banse and Clarbour 2008) suggest that viewing time is a good indirect measure of exploring a child molester's sexual interest. Viewing time correlated with ratings of sexual attractiveness given to adult female images by the rapist sample. Though the rapist sample was small, this finding was of particular interest. Giotakos (2006) too found that the rapists versus the control males in their study viewed significantly longer the photos of women, perhaps in this case explaining the correlation between attractiveness rating and time spent viewing adult females amongst the rapist sample.

Amongst the female participants viewing time correlated with ratings of sexual attractiveness for images of male and female children. Viewing time also correlated with ratings of sexual attractiveness for images of pubescent females amongst the female participants. These results were not anticipated, particularly if VT purports to capture sexual preference and interest.

Viewing time correlated with ratings of sexual attractiveness on the image block of young adult males and old male images amongst this group. These results were expected. VT also correlated with ratings of sexual attractiveness on the image block of young adult females amongst female participants. These finding may link to a study by Israel and Strasberg (2009) found that females viewed same sex pictures significantly longer than did men. They concluded that men's sexual interest is more strongly category specific than is the sexual interest of women (Israel & Strasberg, 2009). In other words, the females may rate these female images as attractive and spend longer viewing them for reasons outside of having a particular sexual interest in these images. Viewing time correlated with ratings of sexual attractiveness for images of pubescent males, young adult males, adult males and old adult females amongst the male low risk group. Again here, similar to the findings for the female sample theses results were not anticipated.

3.11 Conclusions

Overall, some interesting findings came to light when exploring the viewing time paradigm as a measure of sexual interest both amongst a high risk and low risk population. Findings would suggest that perhaps this measure cannot be relied upon too heavily, particularly within a forensic setting. However, the measure does show some

promise. For example, as was expected the Child Sexual Offenders took longer to view images of children than did the low risk population. This is indicative of the fact that these images may be particularly salient to this group and may be indicative of sexual preference. This finding was significant and is supported by existing literature on the viewing time paradigm as is outlined above. However, it was unexpectedly found that this group also took longer to view images of young adults, adults and older adults longer than the low risk sample and the non sexual offender sample. This highlights the question as to whether the viewing time measure is a robust measure to explore sexual interest amongst a sexual offender population. The explanation offered for this unusual finding is as follows. That viewing time procedure could also include fully clothed, partially clothed or nude images and the images may include a person who may erotically pose. (All images in this viewing time measure were fully clothed). Another possible explanation offered was that the materials presented were not explicit enough to capture sexual interest. The literature as outlined above too points to this fact. That is to say that content becomes more explicit viewing time increases. Research suggests the notion that sexually non explicit materials may be less effective at predicting sexual preference as it elicits limited variability between the groups. However, this poses a significant problem for researchers both on an ethical and legal perspective when the viewing time measure is inclusive of images of children. In the context of the rapist population no major significant came to light with the exception that there were some positive correlation found between the attractiveness rating and the time spent viewing images of adult females. To explore any issues pertaining to the viewing time measure and its utility with rapists, the sample size required should be much larger. It would also

be advisable to consider an increase in the explicitness of the images shown in order to try and differentiate sexual interest amongst such deviant populations.

In the context of the low risk male and female populations the following was found. Most of the significant findings in relation to the time taken to respond to images and the time taken to view images were documented amongst the male sample. While it was expected that females would take longer to respond to male images and view males images this was not the overall finding here and the opposite was noted. That is to that females in some instances spent longer responding to and viewing images of females across the different age categories. An explanation for this may be that in relation to the females, that viewing time appears to be an adequate method of measuring categorical sexual interest but a poor measure of within category sexual interest. Finally if this study were to be carried out again the following changes would be recommended. The sample of sexual offenders would also need to be inclusive of female sexual offenders. There may also be a need to include more sexually explicit images within the viewing time paradigm though again here a researcher is faced with ethical and legal difficulties when a measure is inclusive of images of children. Finally based on feedback from participants (particularly amongst the sex offender sample) it is recommended that the images used need to be updated. If the aforementioned amendments were made to this study, the potential that the viewing time measure may have in detecting sexual preference amongst forensic and low risk individuals could be further investigated.

A more recent development in the area of forensic assessment is the Implicit Association Test (Greenwald, 1998). Up to recently this measure has mainly been documented within the social psychology literature as a way of exploring the

associations between strengths. The associations been investigated have very often been linked to those of attitudes, identities and stereotypes. However, more recently Snowden, Witcher and Gray (2007) suggest that implicit measures can provide a valuable tool for research into sexual orientation and erotic preferences. The IAT invites participants to pair words into different categories (child, adult, sexual and non sexual).It was expected that child sexual offenders and possibly the rapists sample would produce shorter mean latencies that the control group in the block in which sex-related words (e.g. pornography, masturbate or fondle) shared the same response key with child related words (e.g. innocence, playground or school uniform). It was hypothesised that the low risk participants would produce shorter mean latencies than the child sexual offenders in the block in which sex-related words shared the same response key with adult related words. (e.g. authority or marriage). Positive IAT effects would indicate responding in accordance with pre-experimentally defined biases (i.e., within the current study, adults as sexual and children as non-sexual) and negative scores indicate the opposite (i.e., adults as non-sexual and children as sexual).

Chapter 4: The Utility of the Implicit Association Test amongst a Low risk and Sexual Offender Sample.

4.1 Introduction

An implicit measurement technique is a technique that can make it difficult to influence responses through self control. Implicit techniques give the opportunity to assess associations, attitudes and compulsions through conscious control. The concept of the IAT (Implicit Association Test) was introduced by Greenwald, Mc Ghee and Schwartz (1998) since then it has been explored in numerous studies to give measures of associations between strengths (Sriram & Greenwald, 2009). The associations been investigated have very frequently been linked to those of attitudes, identities and stereotypes. The implicit association test is a cognitive attention-based measure designed as a way to assess attitudes that are often hidden when a method such that as a self report is used (De Houwer, 2001). Several researchers have addressed this issue (Banaji, 2001; Bargh 1997; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Greenwald & Banaji, 1995, Wilson, Lindsey, & Schooler, 2000). The IAT is based on a very simple idea that people will perform better on tasks and also perform on greater speed and accuracy when they depend on well-practiced cognitive associations that they have when compared to tasks that are not congruent with automatic mental links or associations that they may hold. For example, it is not difficult for most people to associate flowers or a pleasant word with good words and insects with bad words by pressing on the same computer key when they see a flower or a pleasant word(rose or tulip), but a different key when they see an insect or an unpleasant word (sadness or sorrow). Researchers have noted that it is far more difficult for a person to reverse these

associations by categorizing flowers with bad words and insects with good words because these evaluative associations are not automatic (Rudman, 2011). It would be expected therefore that people perform better on a task when flowers is paired with the words good then on a task where insects are paired with good. In the context of sexual offenders it is expected that low risk populations will perform better on a task where a sexual is paired with an adult word instead of a sexual word being paired with a child word (the reverse would be expected of those who have committed sexual offences against children). That is to say that the individual may perform faster on tasks where the word child is associated with a sexual word rather than a sexual word being paired with an adult word. In other words they are faster when performing children + sexual words as opposed to adult + sexual words. Much of the literature to date on the implicit association test that looks at the flower-insect IAT indicates that most people indeed show automatic preference for flowers over insects (Greenwald, Mc Ghee, & Schwartz, 1998). With those who have committed sexual offences against children, it would be expected that this population would show automatic preference for children over adults. When people are asked to complete incompatible or incongruent tasks (for example associating flowers with bad words and insects with good words or children with sexual words and adults with non sexual words), their prior associations may compete with the demands of the task. That is to say their automatic 'flower-good' and 'insect-bad' associations make responding more difficult and slow the process down. Hence, in the context of sexual offenders it would be expected that faster associations are made when sexual words are paired with child over adult's words (studies illustrating this point are discussed below).

The assumption that forms the basis for the IAT is straight forward. That is to say "if two concepts are highly associated, the IAT's sorting tasks will be easier when the two associated concepts share the same response than when they require different responses" (Greenwald & Nose, 2001, p. 85). Authors have suggested a number of possible methods through which the IAT may operate. One of these has been referred to as a shift in response criteria that results in slower responding to both target and attribute stimuli on incongruent tasks (Brendl et al., 2001). Another explanation offered is the Figure Ground Asymmetry Model (Rothermund & Wentura, 2001). This focuses on how people perceive one response category as figure on the ground of the opposing response category.

The words "implicit" and "explicit" have emerged from cognitive psychology, and the literature illustrates how these implicit attitudes might differ from explicit attitudes, stereotypes that people hold (Greenwald & Banaji, 1995). Researchers have suggested that implicit memories may take place even though the person has no awareness that this has occurred (Richardson-Klavehn & Bjork 1988; Roediger, 1990). If one is to apply this evidence and terminology to attitudes, it suggests also that implicit attitudes are ones for which individuals lack awareness. If this line of argument is applied to the implicit association test, the following needs to be considered. Just for example if a person has more difficulty associating a given attitude object with the category *pleasant* than with the category *unpleasant* , it does not necessarily mean that the person is unaware that they view the object as either *pleasant* or *unpleasant* Therefore, if the term implicit is to reflect a person's awareness, there may not be any justification for labelling these attitudes as implicit. In other words disagreement

between the scores on the implicit test and an explicit measure cannot stand alone as proof that the construct is unconscious (Fazio & Olsen, 2003). The aforementioned authors also pinpoint a second problem with the implicit-explicit distinction. They highlight the fact that it implies a pre-existing dual attitude in memory. This is suggesting that both implicit and explicit attitudes exist in memory (Wilson et al., 2003). This notion is considered by Schwartz and Bohner (2011) who suggest that it is more appropriate to view the measure as implicit or explicit, and not the attitude. As noted earlier, the majority of IAT investigations have been associated with social psychology research and linked to empirical studies on attitudes and stereotypes. However, the focus here is to explore the potential of the implicit association paradigm in the evaluation of sexual interest and consider its possible usefulness in the context of forensic assessment.

4.2 The Implicit Association Test in a Forensic Context

Many forensic assessments methods undertaken with individuals with deviant sexual interests use some form of self report to gain and understanding of the functioning of the offender in question. However it is well documented that self report measures are open to distortion when used with dissenting persons (Hammond, 2004). As highlighted by Beckett (1994) individuals interviewed in forensic settings infrequently attend willingly for assessment and therefore are minimizing when describing their sexual offending behaviours. It has been suggested that implicit assessment of offenders has the advantage of being less difficult to manipulate however through self control. In light of this consideration some have turned their focus to implicit measurement techniques within the risk assessment of sexual offenders. Despite the fact that this work is still in its infancy, research to date has helped to establish the

IAT as an indirect means to assess cognitive factors related to sexual offences (Brown, Gray, & Snowden, 2009).

Snowden, Witcher and Gray (2007) suggest that implicit measures can provide a valuable tool for research into sexual orientation and erotic preferences. It has also been noted that response bias can be avoided through computerized administration, as it appears that it can encourage participants to comply in forensic settings. IAT measures have been used with forensic and correctional samples in research on implicit cognitions associated with violence (Gray, MacCulloch, Smith, Morris, & Snowden, 2003; Snowden, Gray, Smith, Morris, & MacCulloch, 2004) and child molestation (Brown, Gray, & Snowden, 2009; Gray, Brown, MacCulloch, Smith, & Snowden, 2005; Mihailides, Devilly, & Ward, 2004; Nunes, Firestone, & Baldwin, 2007). Studies such as these support the idea that IAT measures of sexual interest in children are able to differentiate child molester from non-molesters (Hempel, Buck, Goethals, & Marle, 2012). In a single category implicit association test results of support the existence of a child-sex association as a distinctive characteristic of child sexual offenders.

Nunes, Firestone and Baldwin (2007) modified the IAT to measure cognitions regarding self and children among child molesters and non-sex offenders. Participants were presented with a series of stimulus words via computer which they were instructed to sort into one of four categories (adult, child, sexy, or not sexy) by pressing one of two computer keys. Two categories were indicated by one key while the remaining two categories were indicated by the other key. The idea behind this study was that the individuals speed in responding was expected to depend on the extent to which the categories that share one key are associated in a person's memory. It was expected that

for individuals who were mostly sexually attracted to children, response speed should be quicker when “sexy” and “child” share the same response key than when “sexy” and “adult” share the same response key. As expected the authors found that child molesters viewed children as more sexually attractive than did non-sex offenders. They also draw attention to the fact that viewing children as more sexually attractive was associated with greater risk of sexual recidivism as measured by actuarial risk assessment instruments. This research demonstrated that the IAT has possible promise as a tool for investigating the cognitions associated with sexual offending against children. Interestingly, too, the authors found that the ‘sexy child’ IAT also correlated significantly with increased risk of sexual recidivism as measured by the Static-99 (Hanson & Thornton, 2000), a well recognised actuarial measure of sexual offence recidivism. Authors note that if a methodology such as the IAT indicates that ‘child’ and sexual words are strongly associated, it is then it may imply that such implicit associations underlie a belief that children are sexual. They urge the development of additional methodologies that aim to provide relatively direct measures of implicit cognition.

Mihailides, Devilly and Ward (2004) and Gray, Brown, MacCulloch, Smith and Snowden (2005) also found group differences between sexual offenders against children and non-offenders using versions of the IAT. Gray et al. (2005) found that their “child-sex” IAT showed promise in discriminating between offenders and controls on an individual level in addition to identifying group differences between them. However, questions have been raised in relation to what sexual preference IAT measures are assessing. Although they appear to be tapping into sexual interest in children, the

question remains as to whether they are related to other measures of sexual interest (Greenwald & Farnham, 2000).

Studies that utilize IATS have highlighted how male child molesters have cognitive associations between children and sexual concepts. These studies have also demonstrated that male child molesters hold essential cognitive associations that may facilitate sexual desires towards children (Gannon, Rose, & Williams, 2009). Other studies have helped to establish the IAT as an indirect means to assess cognitive factors connected to sexual offences (Brown, Gray, & Snowden 2009). These researchers used the Implicit Association Test to explore cognitive associations between children and sex in males convicted of child sex offences. It was assumed that these cognitions would differ in paedophilic type offenders, that is to say paedophilic offenders would display implicit connection between children and sex. Researchers also hypothesized correctly that this association between children and sex in paedophilic offenders was present without taking into account their denial of the offence history. These authors suggest that implicit measures can provide a valuable tool for research into sexual orientation and erotic preference that may enhance the use of self reports in the Forensic context.

Schmidt, Clarbour and Banse (2010) also recommend that to overcome the problems with self report or phallometric measures amongst deviant populations that the Implicit Association test may show some promise. These researchers designed the Explicit and Implicit Sexual Interest Profile (EISIP) . This profile combines direct self report and IATS or indirect latency based measures and viewing time measures of sexual interest in adults and children. According to Nelson (2010), the EISIP appears to be an up and coming rival in recent times as it combines direct self report with indirect

measures such as the viewing time paradigm. One of its main advantages is that in contrast to for example the Abel Assessment for Sexual Interest (Abel , Jordan, Hand, Holland, & Phipps, 2001) it that it compares child sex offenders to non sexual criminals and non offenders (Nelson, 2010).

A number of other authors have too advocated the use of implicit methodologies within sexual offending research (Kalmus & Beech, 2005; Ward, Hudson, Johnston, & Marshall, 1997). In one of the first IAT studies in this area, Mihailides, Devilly and Ward (2004) sought to investigate implicit cognitions that sexual offenders are proposed to have, for example, children *as sexual beings, uncontrollability*, and *entitlement*. The authors found evidence for all three theories amongst child sex offenders, with particularly strong support for the children as sexual beings theory. They found that child sexual offenders responded faster to word-pairs such as “child” and “lust” than a non-offending control group.

A similar study by Gray et al. (2005), based on the IAT methodology, sought to determine if child sex offenders held stronger implicit associations between sex and child-related words than an offender control group. As predicted, the child sex offenders produced significantly shorter mean response latencies than the control group during the trials in which sex-related words (e.g. climax, cock, lust) shared the same response key with child-related words (e.g. innocent, school, kid). Furthermore, the authors reported that the IAT had some predictive validity, correctly identifying 78% of the sexual offenders against children, although at the expense of inaccurately identifying 42% of the control participants as sexual offenders. The authors concluded that the IAT can “identify a core cognitive abnormality that may underpin some paedophilic deviant

sexual behaviour" (Gray et al., 2005, p. 304).

Polaschek and Ward (2000) hypothesized that similar to child sexual offenders that there are offence supportive cognitions that rapists have. These implicit theories are *women are unknowable, women as sex objects, male sex drive is uncontrollable, entitlement and dangerous world.* Due to this fact, decisions about whether to treat rapists separately from child sexual offenders and other sexual offences are complex. This is due to the fact that similar to child sexual offender's rapists are believed to have offence supportive cognitions (Marshall, 2004). It is documented that similar to child sexual offenders, rapists hold implicit theories. Gannon, Keown and Rose (2009) note that several implicit measures held by violent offenders are linked to each other through the widespread normalization of violence. This is one similarity between these groups of offenders, another is as follows. Several studies suggest that many offenders commit crimes of child molestation *and* rape. (O' Connell, 1998) found that 64% of rapists who molested children and 59% of intra- familial child abusers sexually abused adolescents or adults outside of the home. Weinrott and Sailer (1991) found that 32% of rapists also abused a child, 34% of extra –familial abusers offended outside the home, and 50% of – intra – familial child abusers sexually assaulted adults outside of the home. Similarly, Heil, Ahimeyer and Simons (2003) reported how 82% of child sexual abusers also admitted to raping adults and 50% of those who raped adults admitted to sexually abusing children. This overlap would seem to suggest that categorizing these deviant groups into "only" child abusers or "only" rapists is certainly not recommended when considering treatment issues pertaining to these groups (Kleban, Chesin, Jeglic, & Mercado, 2012). Kleban et al. (2012) point out that...

> ...studies have produced equivocal findings regarding whether sex offenders are stable in their choice of victims. Indeed, it remains unclear whether a sex offender's subsequent victims are typically of the same gender, age range, and victim–perpetrator relationship as that of the initial victim". (p. 427)

Other studies with the IAT have also established how well implicit measures can predict sexual orientation (Snowden, Withcter, & Gray 2008). Earlier research into sexual preference has relied on self report measures. It is suggested that implicit measures can be utilized to measure a basic aspect of human identity because of their ability to demonstrate sexual orientation perhaps further highlighting their advantages in clinical and forensic context. Meta analytical evidence shows how deviant sexual interest in children is a risk factor for recidivism in child sex offenders. Kamphuis, De Ruiter, Janssen, and Spiering (2005) found that that child sex offenders responded faster to sex and power-related words when subliminally primed with sex and power related cues than controls. The authors concluded that the findings support the hypothesis that there is an implicit link between sex and power amongst men who molest children, a finding consistent with Ward and Keenan (1999) entitlement and dangerous world implicit theories.

To summarise these studies the following can perhaps be noted in the context of the implicit association test and its utility amongst forensic samples. The IAT certainly appears to be a promising method of examining the cognitions of child molesters and may become a valuable addition to the current methods of assessment techniques. Testing whether therapeutic interventions can change implicit child-erotic associations,

whether implicit associations actually predict re-offence and further exploration of the IAT Paradigm in the Appraisal of female sexual interest in children are all areas of potential future research with the IAT. Up to this point the IAT has been almost exclusively used with male sexual offenders. Current literature also highlights the need for additional implicit cognitive studies to understand if child molesters hold offence supportive cognitions that support the committing of sexual offences. The Implicit Association Test shows promise in the forensic setting. However, there are a number of issues that need to be considered when using this measure.

4.3 Considerations and the Implicit Association Test

As outlined above although the IAT appears to be a promising method of examining the cognitions of child molesters and may become a valuable addition to the current methods of assessment techniques. However, the literature on the area of the implicit association test is often concerned with exploring issues around its fakability. Numerous studies on IATs show that they are, though somewhat fakeable, much less fakeable than explicit self-reports (Banse, Seise, & Zerbes 2001; Boysen, Vogel, & Madon, 2006). Kim (2003) suggests that fakability of this measure will rise if participants are informed prior to testing on how to fake the test. The researcher in this instance stresses how faking on mean IAT scores may pose problems in relation to mean IAT scores and may cause issues around the validity of individual differences that may be recorded by the IAT but only if differential faking takes place. That is if different participants fake to different extents. According to Schnabel, Asendorpf and Greenwald (2007) this type of differential faking could change the order of a person’s score.

Research has shown that experience with the IAT increase participant's ability to

fake the IAT (Fiedler & Bluemke, 2005; McKenna, Barnes-Holmes, Barnes-Holmes, & Stewart, 2007). Though the IAT offers the advantage of being a less intrusive and ethically suspect sexual preference assessment (Roche, O' Riordan, Ruiz, & Hand, 2005) noted that the IAT is impacted by the stimulus words chosen. Therefore, a participant's level of education and understanding may affect results, as it does in self report measures. This point may prove problematic amongst a forensic population as not all stimuli sets possess the same ability to detect deviant preferences (Gaither & Plaud, 1997; Lalumiere & Quinsey, 1993). These authors developed an IAT that used pictures for use with sexual and violent offenders. It was suggested that this may have more discriminative ability and better enable comparisons with other measures. Another possible consideration when using the IAT has been offered by (Fazio & Olson 2003). They note that

> ...the IAT may be influenced by associations other than those involved in a perceiver's own automatically activated response to a given exemplar – ones that are potentially independent of the association between a perceiver's own evaluation and the category in question (p. 315).

This has important implications for the efficacy of IAT among offending population. Very often sexual offenders are aware of societies views they may elicit an 'automatic' response consistent with the view generated by society rather than their own. Therefore the IAT, based on the assumption that sexual offenders have implicit attitudes that are consistent with their sexual offences, does not address people who do not display such distorted thinking. For this reason a child molester who does not think

it appropriate to engage children in sexual behaviour will not in theory be identified by the IAT (Fazio & Olson, 2003). It has too been argued that argued that variations in the IAT effect can be caused by a number of factors. Examples suggested are extra personal knowledge and cognitive abilities. In relation to extra personal knowledge (Gawronski, Peters, & LeBel, 2008) define this as knowledge that the person has but regards it as irrelevant for his or her own responses to objects. McFarland and Crouch (2002) make the following point in relation to cognitive abilities suggesting that IAT effects are determined in some way by the cognitive abilities of the participant (for example the overall speed or response is determined by a person's cognitive abilities). Hummert, Garstka, O'Brien,Greenwald, and Mellott (2002) highlight how our cognitive abilities decline with age and this may be indicative of the fact that IAT effects are determined by our cognitive abilities. While there are correlation studies that highlight the notion that the IAT effect can indeed capture attitudes and stereotypes (Greenwald & Nosek, 2001). Blanton and Jaccard (2006) have argued that IAT scores are also relative in that it is impossible to interpret the absolute value and sign of an IAT score. These authors argue that an IAT effect does not disclose whether an individual has positive or negative attitudes.

To conclude the implicit association test is a cognitive attention-based measure designed as a way to assess attitudes that are often hidden when a method such that as a self report is used (De Houwer, 2001)."The assumption that forms the basis for the IAT is straightforward: if two concepts are highly associated, the IAT's sorting tasks will be easier when the two associated concepts share the same response than when they require different responses" (Greenwald & Nose 2001, p. 85). Individuals interviewed in

forensic settings infrequently attend willingly for assessment and are minimizing when describing their sexual offending behaviours. It has been suggested that implicit assessment of offenders has the advantage of being less difficult to manipulate however through self control. In light of this consideration some have turned their focus to implicit measurement techniques within the risk assessment of sexual offenders. Despite the fact that this work is still in its infancy, research to date has helped to establish the IAT as an indirect means to assess cognitive factors related to sexual offences (Brown, Gray & Snowden, 2009). The IAT certainly appears to be a promising method of examining the cognitions of child molesters and may become a valuable addition to the current methods of assessment techniques.

4.4 Aims and objectives

The Implicit Association invites participants to pair words into different categories (child, adult, sexual and non sexual).

1. It was expected that child sexual offenders and possibly the rapists sample would produce shorter mean latencies that the control group in the block in which sex-related words (e.g. pornography, masturbate or fondle) shared the same response key with child related words (e.g. innoncence,playground or school uniform).

2. It was expected that the low risk participants would produce shorter mean latencies than the child sexual offenders in the block in which sex-related words shared the same response key with adult related words. (e.g. authority or marriage).

3. Positive IAT effects would indicate responding in accordance with pre-experimentally defined biases (i.e., within the current study, adults as sexual and children as non-sexual) and negative scores indicate the opposite (i.e., adults as non-

sexual and children as sexual). Scores that approach zero indicate no discrimination between adults or children as sexual or non-sexual (Dawson, Holmes, Gresswell, Hart, & Gore, 2009).

4.5 Methods

4.5.1 Participants. A total of 27 participated in this study (see Table 85). The age range was 18- 73 years. (SD = 14.878). The low risk sample was all students recruited through poster invitation advertised within the School of Applied Psychology, University College Cork. The child sexual offenders and rapists, they were recruited through poster invitation placed in the prison settings by prison governors. No background information was disclosed to the researcher about the exact nature of the offences committed by the child sexual offenders. No background information was made available on the rapists.

Table 85: Participants in the Implicit Association Test

Group	Number of Participants
Low Risk Population	9 (2 Females/7 Males)
Child Sexual Offenders	9 Males
Rapists	9 Males

4.5.2 Materials. Materials were a series of child words, adult words, sexual words and non sexual words presented via a portable laptop. See Appendix C for the list of words presented to participants.

3.4.3 Apparatus. A portable lap top and a consent form were used in this study. See Appendix A for consent form.

4.5.3 Design. The Implicit Association test programme was developed by Dr. Sean Hammond (University College Cork) using Borland Delphi 5 Enterprise. Borland

Delphi 5 Enterprise was chosen as it offers an integrated development environment for building high-performance and compact applications for Windows.

4.5.4 Procedure. On selecting the Implicit Association icon, the participant is directed to the window displayed below. The participant is informed that they will be presented with a screen displaying two word categories or target themes (i.e. sexual/non sexual and child/adult), one of the left side of the screen and one of the right side of the screen. A third word will appear in the middle of the screen and the participant is instructed to select which category the word belongs to by pressing the arrow keys on the computer (i.e. right arrow key for the right word category and left arrow key for the left word category). Participants are also informed that if they make a wrong selection, the word will stay on the screen until they choose the appropriate category. Participants are reminded that this is a speeded task.

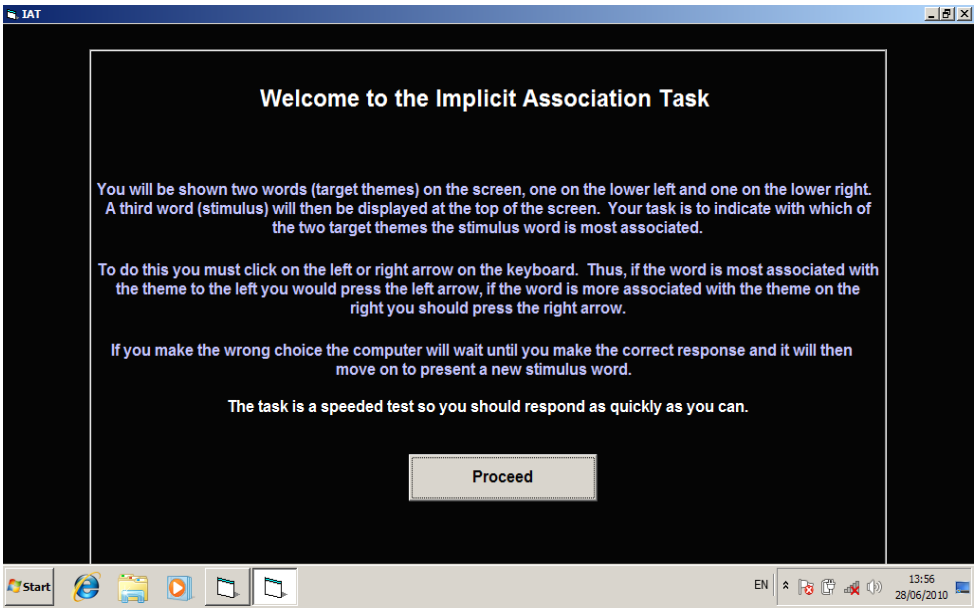


Figure 30: Instruction Page for the Implicit Association Test

Those wishing to complete this assessment are instructed to select Proceed. Those wishing not to partake in this task are instructed to exit the programme, which

will return them to the UCC Assessment System Index page.

4.5.4.1 The five stages of the implicit association test.

Stage 1. On selecting proceed as illustrated above the participant is directed to the first association task. Here the user is presented with a screen containing the word sexual in the bottom left hand corner and the word nonsexual in the bottom right hand corner of the screen. The participant is required to categorise 20 words, which will be displayed in the centre of the screen, as either sexual or nonsexual by using the left and right arrow keys on the keyboard. On selecting start, the first word is presented on screen. This word will remain on the screen until the participant has made the appropriate category selection, following which the second is automatically displayed on screen. This is repeated for all 20 words.

Stage 2. After successfully categorising all 20 Sexual/Nonsexual words, the user is presented with a similar screen to that used in the first categorisation task however the words Sexual/Nonsexual have been replaced with the words Child/Adult. This time, the participant is required to categorise 20 words, which will be displayed in the centre of the screen, as either child or adult by using the left and right arrow keys on the keyboard. On selecting start the first word is presented on screen. This word will remain on the screen until the participant has made the appropriate category selection, following which the second is automatically displayed on screen. This is repeated for all 20 words.

Stage 3. After successfully categorising all 20 Child/Adult words, the participant is directed to next phase of the assessment which examines the association between Adult and Nonsexual, and Child and Sexual (Incongruent task). The participant is presented with 20 Adult/Nonsexual words and 20 Child/Sexual words, which they

previously categorised in the first two categorisation assessments. The participant is instructed that if the word presented is either an adult word or a nonsexual word they should select the left arrow key indicating that the word belongs to the category “adult or nonsexual”. If the word presented is either a child word or a sexual word, the participant should select the right arrow key indicating that the word should belong to the “child or sexual” category. Participants are reminded that this is a speeded task and encouraged to categorise the words as quickly as possible.

Stage 4. After completing the incongruent assessment task participants are again required to complete the Sexual/Nonsexual Association, which they previously completed at the beginning of the IAT assessment. Again the participant is required to categorise 20 sexual/Nonsexual words into either the Sexual or Nonsexual Category by using the right and left arrow keys. Repetition of this phase of the assessment is thought to remove any interference affect between the presentation of congruent and incongruent assessment tasks. After completing the Sexual/Nonsexual Association task, the participant is directed the Congruent Association

Stage 5**:** This phase of the assessment examines the association between Child/and Nonsexual, and Adult and Sexual. (Congruent task). The participant is presented with 20 Child/Nonsexual words and 20 Adult/Sexual words, which they previously categorised in the first two categorisation assessments. The participant is instructed that if the word presented is either a Child or Nonsexual word they should select the left arrow key indicating that the word belongs to the category “child or nonsexual”. If the word presented is either an adult or sexual word they should select the right arrow key indicating that the word should belong to the “adult or sexual” category.

Participants are reminded that this is a speeded task and encouraged to categorise the words as quickly as possible. On completion of the task, the participant is returned to the main screen of the UCC assessment system. All data was recorded in a form, compatible for import to PASW Statistics for data analysis.

4.5.5 Ethical Considerations. Both low risk participants and the offender populations that participated were fully informed of the nature of the assessment tasks prior to participating and ethical considerations were of upmost importance throughout. The following points were explained to each participant. Participation was voluntary and one had the right to refuse to participate and withdraw from the study at any time. It was explained that all data was kept strictly confidential and that no identifying information would be tied to responses therefore participants would remain anonymous. It was further explained that under no circumstances would any reference be made to individuals in oral or written reports that could link them to this study. Before participating on the task, the participant was asked to read the consent form (See Appendix A) and given the opportunity to ask any additional questions. Before participating it was again stressed that all information was treated confidentially and that the information would be used for research purposes only.

4.6 Results

Hypothesis: It was expected that child sexual offenders and possibly the rapists sample would produce shorter mean latencies that the control group in the block in which sex-related words (e.g. pornography, masturbate or fondle) shared the same response key with child related words (e.g. innoncence, playground or school uniform). This block is the incongruent task .It was expected that the low risk participants would produce

shorter mean latencies than the child sexual offenders in the block in which sex-related words shared the same response key with adult related words. (E.g. authority or marriage). This block is the congruent task. Positive IAT effects would indicate responding in accordance with pre-experimentally defined biases (i.e., within the current study, adults as sexual and children as non-sexual) and negative scores indicate the opposite (i.e., adults as non-sexual and children as sexual). Scores that approach zero indicate no discrimination between adults or children as sexual or non-sexual.

4.6.1 Congruent Task. The low risk group (mean=.9093) were faster on completion of the congruent task than were the child sexual offenders (mean=1.0180) (see Table 86). An independent sample t- test showed this difference to be significant (t=-2.639, p=.018 two-tailed).

Table 86: Means for the Low Risk Sample and Child Sex Offenders

	Group	Mean	Std. Deviation	Std. Error
Congruent Mean	Low Risk	.9093	.06720	.00240
	Child Sexual Offenders	1.0180	.11052	.03684

As can be seen from the Table 87, the low risk sample were faster on completion of the congruent task (mean=.9093) than were the rapists (mean=1.0414). An independent sample t-test showed this difference to be significant. (t=2.639, p=.022 two-tailed). As can be seen from the table below the child sexual offender was faster to complete the congruent task (mean=1.0180) than was the rapist (mean=1.0414) (see Table 88). However, this difference was not found to be significant (t=.403, p=.692 two-tailed).

Table 87: Mean for the Low Risk and Rapists

	Group	Mean	Std. Deviation	Std. Error
Congruent Mean	Low Risk	.9093	.06720	.02240
	Rapists	1.0414	.13427	.04476

Table 88: Means for the Rapists and Child Sexual Offenders

	Group	Mean	Std. Deviation	Std. Error
Congruent Mean	Rapist	1.0414	.13427	.04476
	Child Sexual Offender	1.0180	.11052	.03684

4.6.2 Incongruent task. The low risk group were faster to complete the incongruent task (mean=.9511) than were the child sexual offenders (mean=1.0758) (see Table 89). An independent sample t- test showed this difference to be significant (t=-2.526, p=.022). Table 90 shows on the incongruent task the low risk group were faster on completion (mean=.9511) than were the rapists (mean=1.0538), however this difference was not found to be significant (t=-2.000, p=.065) .On the incongruent task the rapist performed faster (mean=1.0538) than did the child sexual offenders (mean=1.0758) (see Table 91). This difference was not found to be significant (t=-.375, p=.713).

Table 89: Mean for the Low Risk Sample and Child Sexual Offenders

	Group	Mean	Std. Deviation	Std. Error
Incongruent Mean	Low Risk	.9511	.08596	.02865
	Child Sexual Offenders	1.0758	.12051	.04017

Table 90: Mean for the Low Risk Sample and Rapists

	Group	Mean	Std. Deviation	Std. Error
Incongruent Mean	Low Risk	.9511	.08596	.02865
	Rapist	1.0538	.12786	.04262

Table 91: Mean for Rapists and Child Sexual Offenders

	Group	Mean	Std. Deviation	Std. Error
Incongruent Mean	Rapist	1.0538	.12786	.04262
	Child Sexual Offenders	1.0758	.12051	.04017

The D score for the Implicit Association test was calculated. This formula is calculated from the two means (the congruent and the incongruent mean), by their two standard deviations and their associated numbers. This formula is therefore specified in terms of six variables. Mn1, Mn 2, NI, N2, SDI and SD2. The formula bypasses the need for separate computation of the "inclusive" standard deviation. Instead the denominator for D (i.e. the inclusive standard deviation) is computed from the two block standard deviations, the difference between their means, and their Ns. The steps in this calculation are outlined in Table 92.

Table 92: Formula for Calculating the D Score (IAT Effect Size)

```
COMPUTE Numerator_for_D = (Mn2 - Mn1) .

COMPUTE Denominator_for_D = SQRT( ( ((N1-1) * SD1**2 + (N2-1) * SD2**2)
        + ((N1+N2) * ((Mn2-Mn1)**2) / 4) ) / (N1 + N2 - 1) )

COMPUTE D = Numerator_for_D / Denominator_for_D .
```

Because this is an effect size, the D statistic provides an estimate of the magnitude of the implicit association test effect: D statistic of .15, .35 and .60 correspond to small, medium and large effects sizes respectively. The findings from each of the three groups in the context of each person's results on the incongruent and congruent tasks and also the effect size that was found for each participant are reported

below. For the child sexual offender results see Table 93.

Table 93: Child Sexual Offenders Means and Effect Size

Incongruent Mean	Congruent Mean	IAT effect
1.08	1.02	.12
1.14	1.18	-.01
1.20	1.04	.29
1.01	.98	.01
.92	1.15	-.41
1.28	1.09	.04
1.08	.90	.32
.92	.94	-.04
1.04	.85	.34

For the child sexual offender population it was expected that these offenders would perform fastest on the incongruent over the congruent task with negative d scores being produced. This was found with three participants in this group. (Incongruent mean=1, 14, Congruent mean=1.18, d=-.01), (Incongruent mean=.92, Congruent mean=1.15, d=-.41) and (Incongruent mean=.92, Congruent mean=.94, d=-.-04). The results for the six remaining participants were as follows. (Incongruent mean=1.08, Congruent mean=1.02, d=.12), (Incongruent mean=1.20, Congruent mean=1.04, d=.29), (Incongruent mean=1.01, Congruent mean=.98, d=.01), (Incongruent mean=1.28, Congruent mean=1.09, d=.04), (Incongruent mean=1.08, Congruent mean=.90, d=.32) and (Incongruent mean=1.04, Congruent mean=.85, d=.34).

Table 94: Rapists Means and Effect Size

Participant	Incongruent Mean	Congruent	IAT effect
1	1.20	1.04	.29
2	1.02	.88	.25
3	1.06	1.14	-.14
4	.98	.87	.19
5	1.13	1.18	-.09
6	1.22	1.22	.00
7	.80	1.05	-.45
8	1.00	.88	.21
9	1.00	1.10	-.08

From Table 94, it can be seen that for rapist participants 3,5,7, and 9 faster pairings for the incongruent task and negative IAT effects or D scores were noted. They were as follows: (Incongruent mean=1.06, congruent mean=1,14, d=-.-.14), (incongruent mean=1.13,congruent mean=1.18,d=-.09), (Incongruent mean=.80, congruent mean=1.05, d=-.45),(Incongruent mean=1.00, congruent mean=1.10, d=-.08). One participant in this category produced a similar mean on their (congruent mean=.122 and incongruent mean=1.22,d=.00). Scores that approach zero indicate no discrimination between adults or children as sexual or non-sexual. Finally, for four of the rapists in this category results were not as expected as is to say, they performed faster on the congruent tasks over the incongruent tasks and produced positive d scores. They were as follows.(incongruent mean=1.20, congruent mean=1.04, d=.29), (incongruent mean=1.02, congruent mean=.88, d=.25), (incongruent mean=.98, congruent mean=.87,d=.19) and (incongruent mean=1.00, congruent mean=.88, d=.21).

For the low risk sample it was expected that faster responses would take place when the congruent task was undertaken, that is to say that the low risk sample would pair the words adult and sexual words faster than they would pair child and sexual words (see Table 95). Results for over half of the participants in this sample were as expected. That is to say they completed the congruent task faster than they did the incongruent task. Here again positive scores indicate responding in accordance with pre-experimentally defined biases (i.e., within the current study, adults as sexual and children as non-sexual) and negative scores indicate the opposite (i.e., adults as non-sexual and children as sexual). Scores that approach zero indicate no discrimination between adults or children as sexual or non-sexual.

Table 95: Low Risk Population Means and Effect Size

Low Risk Participant	Incongruent Mean	Congruent	IAT effect
1	1.03	.97	.10
2	1.11	1.00	.21
3	.87	.96	-.15
4	1.00	.85	27
5	.96	.89	13
6	.86	.92	-11
7	.91	.93	-.03
8	.86	.90	-.06
9	.91	.78	.32

As can be seen from Table 95, the following scores were yielded form the low risk sample and were expected results from this particular implicit association test. The expected results from five of the participants were as follows. (Congruent mean=.97, incongruent mean=1.03, d=.10), (Congruent mean=1.00, incongruent mean=1.11, d=.21), (Congruent mean=.85, incongruent mean=1.00 d=.27), (Congruent mean=.89, incongruent mean=.96, d=.13) and (Congruent mean=.78, incongruent mean=.91,d=.32). Of the remaining four participants in the low risk category results were not as expected. Results for these four participants are as follows. (Congruent mean=.96, incongruent mean=.87, d=-.15). (Congruent mean=.92, incongruent mean=.86, d=-.11), congruent mean=.93, incongruent mean=.91, d=-.03) and (Congruent mean=.90, incongruent mean=.86, d=-.06).

4.7 Discussion

Hypothesis: The low risk group was significantly faster on completion of the congruent task than were the child sexual offenders and the rapists. (This result was expected). The low risk group was significantly faster to complete the incongruent task than were the child sexual offenders. These findings were not anticipated. Positive effect sizes were expected for the non offending sample. Negative effect sizes on the

implicit association task were expected for the child sexual offenders and rapists. These expected scores showed 30% accuracy with the child sexual offenders, 45% accuracy with the rapists and 56% accuracy with the low risk sample.

4.7.1 Group Differences on the Implicit Association Test. The low risk group were significantly faster on completion of the congruent task than were the child sexual offenders and the Rapists. Though the child sexual offenders had a faster mean response on the congruent task over the rapists, the difference was not found to be significant. The significant results reported here were expected that is to say that it was anticipated that the low risk participants would produce shorter mean latencies than the child sexual offenders in the block in which sex-related words shared the same response key with adult related words. In the context of the child sexual offender it would be expected that child and sexual are associated more in memory than is the adult and sexual. Hence a possible explanation for the low risk sample having faster mean responses on the congruent task than the child sexual offenders.

Though this particular IAT was designed to differentiate the possible differences that may exist between a low risk sample and child sexual offenders on response times to congruent an incongruent tasks, a sample of rapists also participated in the study. Interestingly the rapists took longer also to complete the congruent task than did the low risk sample. Ward and Keenan (1999) suggest implicit cognitions that sexual offenders are proposed to have. The literature too illustrates that these cognitions do not necessarily differ amongst child sexual offenders and rapists. In the context of child sexual offenders Ward and Keenan (1999) propose implicit cognitions such as entitlement and dangerous world (the world is a dangerous place and one should fight

back or else seek out non-threatening sexual partners such as children) and also that sexual behaviour is uncontrollable. That is to say if a person engages in sexually abusive behaviour they are not to blame. On a similar note, Polaschek and Ward (2000) hypothesized that similar to child sexual offenders that there are offence supportive cognitions that rapists have. These implicit theories are women are unknowable, women as sex objects, male sex drive is uncontrollable, entitlement and dangerous world. Gannon, Keown and Rose (2009) too note that implicit theories are held by violent offenders. Though the sample size in this study was small, the following was found. Both the child sexual offenders and the rapists took longer to complete the congruent task, did the low risk sample. This finding mirrors ideas as outlined in the literature, child sexual offenders and rapists may hold similar offence supportive cognitions. Finally on the congruent task the following needs to be considered. Several studies suggest that many offenders commit crimes of child molestation and rape ((Heil, Ahimeyer, Simons, & English 2003;O' Connell, 1998; Weinrott & Sailer, 1991). As mentioned earlier, these crossover rates would seem to suggest that categorizing these deviant groups into "only" child abusers or "only" rapists is certainly not recommended when considering interventions with these offenders. Typologies illustrate the diversity in sex offenders—the victims they select, their varying motivations to sexually offend, their patterns of offending, and the specific kinds of issues that seem to underlie or drive their offending. However not all sex offenders may fit neatly into any one typology and may require interventions that are unique to each offender. Kleban, Chesin, Jeglic, and Mercado (2012) too question the cross over rate in the selection of victims concerning sexual offenders.

The low risk group were significantly faster to complete the incongruent task than were the child sexual offenders. On comparisons between the groups, this was the only significant finding on the incongruent task. These findings were not anticipated. In line with documented research it was expected that child sexual offenders and possibly the rapist sample would show significantly faster mean responses than low risk populations when presented with the incongruent task. For example, Gray, Brown, MacCulloch, Smith, and Snowden (2005) found that child sex offenders produced significantly shorter mean response latencies than the control group during the trials in which sex-related words shared the same response key with child-related words. Similarly Nunes et al. (2007) found that was expected that for individuals who were mostly sexually attracted to children, response speed should be quicker when "sexy" and "child" share the same response key than when "sexy" and "adult" share the same response key.

There are a number of possible explanations again for these findings. For example, Roche, O' Riordan, Ruiz, and Hand (2005) noted that the IAT is impacted by the stimulus words chosen. Therefore, a participant's level of education and understanding may affect results, as it does in self report measures. This point may prove problematic amongst forensic populations as not all stimuli sets possess the same ability to detect deviant preferences (Gaither & Plaud, 1997; Lalumiere & Quinsey, 1993). Too very often sexual offenders are aware of societies views they may elicit an 'automatic' response consistent with the view perpetuated by society rather than their own. Therefore the IAT, based on the assumption that sexual offenders have implicit attitudes that are consistent with their sexual offences, does not address people who do

not display such distorted thinking. For this reason a child molester who does not think it appropriate to engage in sexual behaviour with children will not in theory be identified by the IAT (Fazio & Olson, 2003). McFarland and Crouch (2002) make the following point in relation to cognitive abilities suggesting that IAT effects are determined in some way by the cognitive abilities of the participant (for example the overall speed or response is determined by a person's cognitive abilities). Hummert, Garstka, O'Brien,Greenwald, and Mellott (2002) highlight how our cognitive abilities decline with age and this may be indicative of the fact that IAT effects are determined by our cognitive abilities. However, the IAT did show some group differences as described on the congruent task above. Mihailides, Devilly and Ward (2004) and Gray et al. (2005) also found group differences between sexual offenders against children and non-offenders using versions of the IAT.

4.7.2 Individual Scores on the implicit Association Test. It was necessary to examine individual scores for each of the groups because of the small sample size and in particular take a closer look at the IAT effect. Positive scores would indicate responding in accordance with pre-experimentally defined biases (i.e., within the current study, adults as sexual and children as non-sexual) and negative scores indicate the opposite (i.e., adults as non-sexual and children as sexual). Scores that approach zero indicate no discrimination between adults or children as sexual or non-sexual (Dawson, Holmes, Gresswell, Hart, & Gore, 2009). The effect size provides an estimate of the magnitude of the implicit association test effect. For the child sexual offender and possibly the rapist population it was expected that these offenders would perform fastest on the incongruent over the congruent task with negative effect sizes being produced. For the

low risk sample it was expected that they completed the congruent task faster than they did the incongruent task with positive scores indicate responding in accordance with pre-experimentally defined biases. Overall, the IAT showed that there was 30% accuracy with the child sexual offenders, 45% accuracy with the Rapists and 56% success rate with the low risk sample although at the expense of inaccurately identifying some of the control group as having sexual offender profiles and some of the sexual offenders as having low risk profiles. Though the sample size was small the findings here are very similar to a study by (Gray et al., 2005). In their study they found from the sample of child sexual offenders= 33%, 45% accuracy with the rapists and 56% success rate with the low risk sample, correctly identifying 78% of the sexual offenders against children, although at the expense of inaccurately identifying 42% of the control participants as sexual offenders.

4.8 Conclusions

If this study were to be replicated is would certainly be necessary to include a much larger sample size of sexual offenders (though the difficulty in access to this particular group is problematic). A similar study would too need to be inclusive of a sample of female sexual offenders, as the literature on the implicit association test in a forensic setting shows how it has mostly included male sexual offenders. It may also be interesting to design an IAT inclusive of pictures for use with violent and sexual offenders as it may have more discriminant ability. Using sexually enticing images rather than words, offers an advantage in that the participant's level of education and linguistic understanding does not function as an extraneous variable.

Results above showed that there were significant differences between the low

risk sample, the child sexual offenders and the rapists on the completion of the congruent task. Though the sample size was small, perhaps though it can be said that the test shows promise in identifying implicit cognitions that may underpin some deviant sexual behaviours. However it is too recognised that not all stimuli sets can detect deviant preference amongst deviant groups (Gaither & Plaud, 1997; Lalumiere & Quinsey, 1993). This is apparent in this case where some of the high risk participants yielded results that were similar to the low risk sample. Though the IAT certainly shows promise, it as yet could not be used in isolation as a measure of sexual interest amongst deviant groups. Therefore if one is to base the implicit association test of the premise that sexual offenders have implicit attitudes and cognitions that are in line with their sexual crimes, it fails to address people who do not display distorted thinking. For this reason a child abuser who does not think it appropriate to engage children in sexual behaviour will not in theory be identified by the IAT (Fazio & Olson, 2003).

The above study shows that the Implicit Association test does show promise when utilised amongst a Forensic Sample. As mentioned earlier, the measure is relatively new in the context of forensic assessment. Rapid serial visual presentation (RSVP) is also new to the domain of forensic assessment. It operates on the premise that if two target images are presented within 500 milliseconds of each other, the possibility that the participant will recognize the second target is significantly reduced when the first target is of salience to the individual. This is known as the attentional blink (AB).Based on the suggestion that an individual's target recognition profile may be indicative of their sexual interests; the RSVP technique has been adapted for use as a sex offender assessment tool. It is hypothesised that nude over clothed images, that

stimulus items of real people over images of people and young over old images will induce a greater AB in both the prisons and low risk participants.

Chapter 5: Exploring the potential of the Rapid Serial Visual Presentation amongst an Offender and Low Risk Population

5.1 Introduction

Rapid Serial Visual Presentation (RSVP) is a procedure developed from fundamental information processing phenomena documented in cognitive psychology. Within this field it is well established that emotion facilitates both the speed at which arousing information is processed and the likelihood that it will be processed (Phelps, Ling, & Carrasco, 2006). As salient images require processing in the visual domain of the brain, as well as at the semantic or emotional level of cognitive functioning they take longer to process than arbitrary or mundane images (Anderson & Phelps, 2001). The RSVP task typically requires participants to identify a single target image that is presented amongst a series of rapidly presented visual images. In line with previous research, RSVP operates on the premise that if two target images are presented within 500milliseconds of each other, the possibility that the participant will recognize the second target is significantly reduced when the first target is of salience to the individual (Kyllingsbaek, Schneider, & Bundesen, 2001). This is known as the attention blink effect (Raymond, Shapiro, & Arnell, 1992). The ability to correctly identify the second target is only enhanced when the interval between target one and target two is greater than 500milliseconds (Shapiro & Raymond, 1994). It is believed that RSVP techniques offer the advantage of being more robust to faking than both physiological and viewing time measures as images may be processed without the need for conscious perception in the individual. The purpose of this particular study is to determine the utility of this measure amongst an offender sample and a low risk sample when presented with (nude

and clothed images and nude and clothed photos) based on the suggestion that an individual's target recognition profile may be indicative of their sexual interests. Further development of the RSVP technique as an involuntary attentional measure of sexual interest may therefore be a possible alternative to viewing time or genital arousal both of which are impacted by conscious awareness and voluntary control.

5.2 Studies on the RSVP Paradigm

Based on the suggestion that an individual's target recognition profile may be indicative of their sexual interests the RSVP technique has been adapted for use as a sex offender assessment tool. Kalmus (2003 as cited in Kalmus & Beech, 2005) aimed to differentiate child molesters from controls based on their detection of two target images from eight neutral images. The first target image consisted of either a non sexualized child or an animal. The second target image, which followed the first, consisted of a chair or a train. Amongst child molesters, results indicated a significantly greater interference effect in the accurate identification of the second target image when the first target image depicted a child. No such significant interference effect was observed for normal controls in this regard. (Beech, Tipper, Baudouin, Flak, & Humphreys, 2008) also found a similar interference effect following exposure to child images over animal images in a sample of sexual offenders. They demonstrated that the RSVP task could accurately discriminate adult male sexual offenders against children from non-offending controls.

Crooks, Brooks, Beech and Bickley (2009) examined the utility of a RSVP task with 20 adolescent sex offenders and 29 non-offending controls using a child/animal dichotomy and found that both groups showed a significant attention blink interference

effect following the presentation of animal images over child images. The authors suggested that the subtly of the stimuli used (clothed children) coupled with the adolescents developing sexual interests may have hindered the procedure (Crooks et al., 2009). The authors also noted that some adolescents had difficulty understanding the procedure and recommended adapting the RSVP task to the needs of the adolescent in future studies. Although not finding the expected category and group differences, this study nonetheless highlights the potential RSVP has in accessing deviant sexual interests in adolescent populations and encourages further research. Such results are promising as they suggest that the attention blink effect can be influenced by the interference of sexual arousal with cognitive processing. Nonetheless, the nature of the stimulus set raises issues regarding the interpretation of results. It is not possible to conclude if such findings are indicative of pedophilic interests as the images are not of a sexual nature. For this reason the possibility that the emotional response resulting in the attention blink effect may have been caused by an individual's everyday experience of children (parents, teachers, nannies etc.) cannot be ruled out (Kalmus & Beech, 2005). Due to the findings of these authors the effectiveness of the child/animal dichotomy has been questioned. They propose that future research focusing on an adult/child dichotomy may alleviate some of these concerns. It is still uncertain how this measure will show potential as a clinical tool and raises questions as to whether rapid serial visual presentation technique has any utility in assessing deviant interests in offenders.

A study by Mac Conaill (2012) illustrated the following findings with the rapid serial visual presentation task. The aim of this study was to determine if the Attentional Blink can isolate sexual attraction, to determine if clothed images have the same effect

as nude images, and finally to determine if computer generated images produced the same effect as real images. The author reported that the sex of the target did not influence the overall Attentional Blink. Perhaps, suggesting that "the Attentional Blink as a measure of sexual interest may not be as robust as previously thought" (Mac Conaill, 2012, p. 8). However, Mac Conaill upon further inspection found that there was an increased Attentional Blink shown from the male participants to female stimuli, with the effect being weakened for female participants. It was also found that nude images induced a greater blink than did clothed images. Thus indicates that

> ...the sexual provocation of the image is a big factor in assessing sexual interest and that using real clothed images of children in paedophile assessment may not be useful, which further underlines the importance of developing computer generated images for this purpose. (Mac Conaill, 2012, p.8)

Flack (2011) carried out a study with RVSP in an attempt to see if this measure could detect sexual interest towards images of children. The study included both intrafamial and extra familial child sexual offenders. These particular groups were compared to low risk control groups. The findings here support the notion that indeed the paradigm had the potential to differentiate the sexual interests held by extrafamilial child sexual abusers. The author here successfully reported that concerning these extrafamilial child sexual abusers their deviant sexual interest in children was displayed through their larger attentional blink effect towards images of children and highlights from this finding that rapid serial visual presentation could be a method of tapping into deviant sexual interests held by extra familial child sexual offenders. Flack (2011) notes

also how the findings of this study concur with the findings presented by Beech et al. (2008) who reported that they too found that intra familial and extrafamilial child sexual abusers produced a greater attentional blink towards images of children that were presented to these groups and notes the fact that these researchers too reported a greater attentional blink to child images by extra familial child sexual offenders. The finding by Flack (2011) and by Beech et al. (2008) is indicating that extra familial child sexual offenders exhibit a stronger sexual interest in children when the comparison is made to intra familial child sexual offenders.

Flack (2011) also conducted a study utilising the rapid serial visual presentation measure on a low risk sample of males and females. These participants were presented with images of clothed male and female adults in order to examine how heterosexual adults might respond to the images that they were sexually attracted to. The author here reported that there were no conclusive findings from this study in relation to whether rapid serial visual presentation can detect sexual preference in low risk participants. An interesting point was made here in relation to the categories of images that were presented. Flack questions the lack of the strength of erotic type images. If this caused a problem in the context of rapid serial visual presentation, it is of interest and warrants further investigation. As outlined earlier with other measures such as the viewing time assessment, the lack of inclusion of more sexually explicit images may be hindering the detection of sexual interest across both low risk and high risk populations. The aforementioned author however acknowledges than in this particular study RSVP did show some ability to discriminate female's sexual interest in males.

Finally, Flack (2011) conducted a study utilising nude images on the RSVP

measure also amongst a low risk population. Grace (2005 as cited by Flack, 2011) documented how nude images produced a greater attentional blink effect with nude females in male participants. Flack here reports how the findings of this study did not support the findings of Grace (2005), in that nude images did not induce a greater attentional blink in either the male or the female sample. The explanation offered here again is that the nude images were not erotic enough to induce the AB or simply that the RSVP measure overall does not have the potential to isolate sexual interest in a sample of low risk males and females (Flack, 2011).

5.3 Theories of Attentional Blink

A review of the literature in the area of the attentional blink shows its importance as a problem of people reporting the second of two targets when presented in close brief succession. (Martens & Wyble, 2010). This phenomenon has been greatly critiqued and evaluated in the area of attention research because it provides information about the pace at which stimuli can be encoded into easily obtained representations. According to Duncan, Ward, and Shapiro (1994), there are a number of reasons why AB has been given much attention in the psychological literature. They suggest that the AB mirrors an extraordinary long- lasting attentional deficit. Another important factor that needs answering in the attention literature is in relation to how long an object that must be recalled continues to occupy attentional capacity. Over the years many theories have been presented in order to explain the phenomena that are known as the Attentional Blink. These theories are outlined below. There have been a number of theories presented as to why the attentional blink takes place. They are the inhibitory model, the inference model, and the two stage model.

5.3.1 The inhibitory model. One of the first researchers to identify the attentional blink when using a rapid serial visual presentation was (Broadbent & Broadbent 1987). In their study they asked participants to report the identity of two words, defined by being uppercase in an RSVP stream of lowercase words. They discovered that participants had the ability to report the target and the word just following it with a fairly high rate, but showed problems reporting words that were presented between 400 to 700 ms after the first target. Similar findings were noted by Reeves and Sperling (1986) and Weichselgartner and Sperling (1987). To explain what might be taking place in this instance Broadbent and Broadbent (1987) suggested that this deficit in reporting both items was linked to an inhibitory process that took place at an initial stage when the targets were identified. This model became known as the Inhibition Model (Raymond, Shapiro, & Arnell, 1992) outline this as a popular and influential model, to explain the AB phenomena. This model is suggesting that because individuals could correctly identify the first target, it caused an inhibition or problems with attentional and identification processes for the time that followed. Hence the individual had problems identifying the second stimulus (Shapiro & Raymond, 1994; Shapiro, Caldwell & Sørensen, 1997; Shapiro, Driver, Ward, & Sørensen, 1997). Shapiro, Raymond and Arnell (1994) conducted many experiments, to explore the inhibitory model further. They illustrated that the difficulty of the task correlated only a little with the size of the blink, which was noted by these researchers not to support the predictions of the inhibition model. Therefore the inhibition model was seen as being an inaccurate account of the AB effect. Following on from this model, the Interference Model was proposed.

5.3.2 The interference model. The Interference model was proposed by (Shapiro, Raymond & Arnold, 1994) to explain the Attentional Blink and follows on from their proposed Inhibitory model in 1992.This model suggested the following. That is to say that stimulus presented after target one i.e. target two are processed by the individual but are unavailable for report. It is suggested that the inability to process these stimuli accurately is because interference occurs between the two targets and their respective masks which enter a short term visual store from which they are selected for report (Kimron, Shapiro, & Luck, 1999).

5.3.3 The two-stage model. Chun and Potter (1995) proposed the two stage model of attentional blink. They outline how the identification of the targets in the procedure occurs in two stages. In the first stage the persons quickly notices the target image, however this can even though encoded, be forgotten by the person being tested. Authors note with this particular model that the Attentional Blink occurs due to the loss of the second target representation occurring while targets ones processing is finished. In other words if a person while performing a rapid serial visual presentation task takes longer on target one, then the attentional blink with increase resulting in the delay impacted upon target2. In this model the attentional blink may be indicative of the many items presented in the RSVP procedure and having the impact of a delay in reporting for the person in task two (Isaak, Shapiro, & Martin, 1999).

5.4 Aims and Objectives

The specific aims of this study are as follows:

1. This study aims to investigate the utility of a RSVP assessment in determining sexual preference among a low risk population and general offending population. The

accuracy of blink stimulus identification was used for data analysis. A breakdown of the 32 clothed and nude images and clothed and nude photos is proved in the stimulus images section below.

2. This study aims to explore the use of clothed and nude images and clothed and nude photos in sexual preference assessment by examining the relative effects of both nude and clothed images and nude and clothed photos in eliciting an attentional blink.The target image was used to investigate whether sexual attraction to the target image resulted in decreased accuracy in identifying the blink stimuli (the image immediately following the target image).

5.5 Method

4.5.1 Participants. A total of 79 participants took part in the rapid serial visual presentation measure. (See table 96). The age range was 18-76 years. (SD= 13.166).

T he majority of the low risk participants were college students, recruited through poster invitation advertised within the School of Applied Psychology University College Cork. Advertisements for participants were also placed in a local newspaper. All testing took place in a quite setting within the School. The offender population was recruited through poster invitations being placed in a number of Irish Prisons by Prison Governors. Of the nonsexual offender population that participated, the nature of their crimes or any background information was not disclosed to the researcher.

Table 96: Participants in the Rapid Serial Visualisation Task

Group	Participants
Nonsexual Offenders	33 (Males)
Low Risk Sample	46 (Females) 18 (Males)

5.5.1 Materials.

5.5.1.1 Details of the Stimulus Images. Initially, the Stimulus images designed for use in the Rapid Serial Visual Presentation Task consisted of a series of adult male and female images drawn from 2 main sets: a computer generated (CG) stimulus set previously developed by the authors (Griffin, Murphy, & Hammond, 2008) and a set that was used for research and assessment in the clinical and decision making support unit of Broadmoor hospital. The CG Stimulus Set was validated by a panel of external reviewers and is considered a reliable indication of the Tanner Stages of Development (1962) across the lifespan. A number of pilot studies took place and the software was tweaked and adjusted accordingly. Currently there exists no standardized set of stimuli for use in sexual preference assessment. The content and type of stimuli vary according to age, gender, ethnicity, degree of nudity and type of action portrayed in additional to presentation modality. This renders comparisons across different methodologies problematic. Research has demonstrated that using explicit stimulus sets to compare methodologies results in high correlations and strong test-retest reliabilities (Abel, Huffman, Warberg, & Holland, 1998; Harris, Rice, Quinsey, & Chaplin, 1996). However, the use of sexual abuse of images of children and adolescents raises ethical and legal concerns. One way to overcome this is to use non-explicit material but this is less effective at predicting sexual preference as it elicits limited variability between groups (Quinsey et al., 1993).

Griffin and Hammond (2008) developed a Computer Generated CG stimulus set which was originally tailored for use in this study. These images overcome the ethical issues of using abuse images of children and also allow for a greater understanding of

the relationship between pedophilic and hebephilic interests as they focus on the stages of development outlined by Tanner (1979). The Tanner scale measures sexual development in adolescents based on characteristics that can be measured such as size of genitals or pubic hair. Before piloting the battery the CGI set was validated (Griffin & Hammond, 2008). Twenty individuals were recruited and asked to rate each image in terms of age and stage of development in line with the Tanner stages (Tanner, 1979). The findings are in line with the expected age and stage of development for each image.

In order to accurately represent the development of secondary sexual characteristics and thus more accurately differentiate pedophilic and hebephilic sexual offenders, the developed CG image set contained a full frontal view of models of each gender across the 5 Tanner Stages. The validation study required that close attention was paid to each image in order to decide an appropriate age and stage of development. Although the obtained results indicated that the CG set is a valid representation of the Tanner Stages, a number of participants noted feeling uncomfortable with the required task, with some indicating they found the task “disturbing”. Such findings render this set difficult for use in tasks such as the Viewing Time which require stimulus presentation for periods exceeding 2 or 3 seconds. It was therefore decided to use an alternative stimulus set, the “Broad moor Set”, to test the utility of the developed battery. This stimulus set had previously demonstrated its utility in sexual preference assessment and has been used in the risk appraisal of violent and sexual offenders in the UK. It was therefore considered an appropriate alternative to the developed CG image set. The target image was used to investigate whether sexual attraction to the target image resulted in decreased accuracy in identifying the blink stimuli (the image immediately

following the target image). The accuracy of blink stimulus identification was used for data analysis. The target images are outlined in Table 97.

Table 97: Categories of Photos and Images included in the RSVP

Nude Female Young Photo (X2)	Nude Male Young Photo (X2)
Clothed Female Young Photo (X2)	Clothed Male Young Photo (X2)
Nude Female Young Image (X2)	Nude Male Young Image (X2)
Clothed Female Young Image (X2)	Clothed Male Young Image (X2)
Nude Female Old Photo (X2)	Nude Male Old Photo (X2)
Clothed Female Old Photo (X2)	Clothed Male Old Photo (X2)
Nude Female Old Image (X2)	Nude Male Old Image (X2)
Clothed Female Old Image (X2)	Clothed Male Old Image (X2)

5.5.1.2 Apparatus. The following apparatus was utilized in the current study. A laptop (on which the developed RSVP programmed ran) and a consent form (see Appendix A)

5.5.2 Design. The RSVP programmed was developed by Dr. Sean Hammond (University College Cork) using Borland Delphi 5 Enterprise. Borland Delphi 5 Enterprise was chosen as it offers an integrated development environment for building high-performance and compact applications for Windows. Delphi overrides the Windows API, therefore guaranteeing that the task is not interrupted, as would be the case if the programmed was developed using an interpreted language.

Individual Delphi Project files were created for each of the 32 blocks in the RSVP assessment. Each image was displayed for 20 milliseconds with an interval of zero milliseconds between images. After the presentation of images, a checklist was presented to participants containing six descriptors; the first image presented in the set,

the last image presented in the set, the image preceding the target image, the target image, the image following the target image (also known as the blink stimuli) and an absent image that was not displayed in the set. The order of the descriptors was randomized for each of the 32 blocks. An incorrect image (an image that did not appear in that particular blocks) was included to identify individuals who provided responses based on guessing and/or selecting all options.

5.5.3 Procedure. On opening the UCC Assessment System the participant is presented with the window shown in Figure 31. The participant is asked to provide a unique code; this code can be in numerical or alphabetical form, or a mixture of both. The participant is also asked to indicate their sex by typing either male or female in the box provided. Finally, the participant is asked to indicate their age by typing their age.

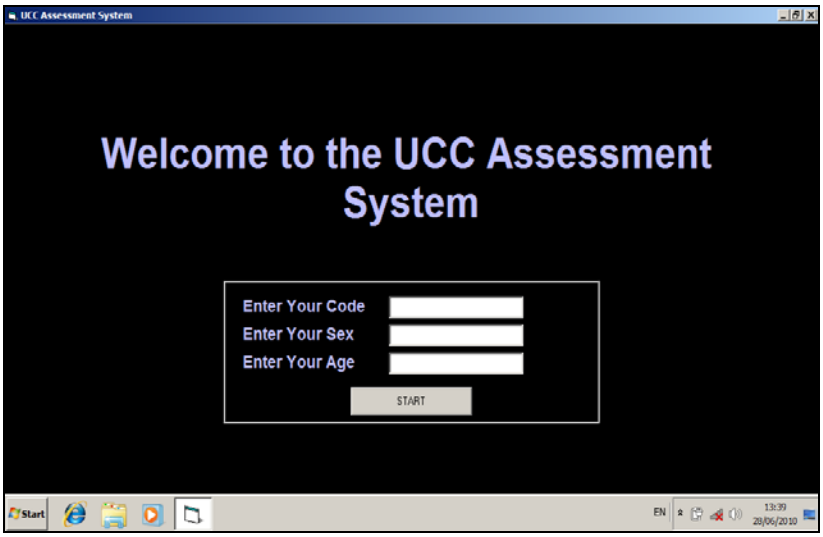


Figure 31: UCC Assessment System

Once the participant has completed all the required boxes they are instructed to select the start button. On hitting the start button, the participant is taken to the index page of the UCC assessment System as shown in Figure 32. The Participant then hits on the option for the rapid serial visual presentation task.

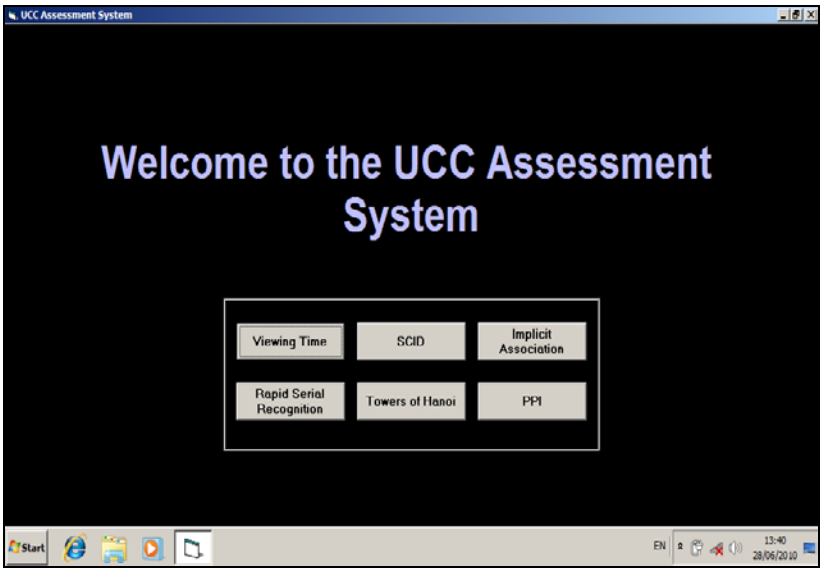


Figure 32: Index Page of the Assessment System

On selecting the Rapid Serial Recognition icon the participant is directed to the window depicted shown in Figure 33. Participants are informed the task involves viewing 32 sets of images, which will be rapidly displayed on the screen (20 milliseconds per image). After the presentation of each set, participants are required to identify which items they have seen from a list of six descriptors, by ticking a box on screen. Participants are informed that some image descriptors will refer to images that did not appear in that particular block. Participants are also informed that some images contain nudity and any participant wishing not to partake in this assessment is advised to select the EXIT button. Selecting the EXIT button directs the participant to the index page of the UCC Assessment System. Participants are given a few minutes to read the instructions outlined on the main page of the RSVP assessment. Those wishing to partake in this assessment are instructed to select the PROCEED button, located on the bottom left hand corner of the screen.

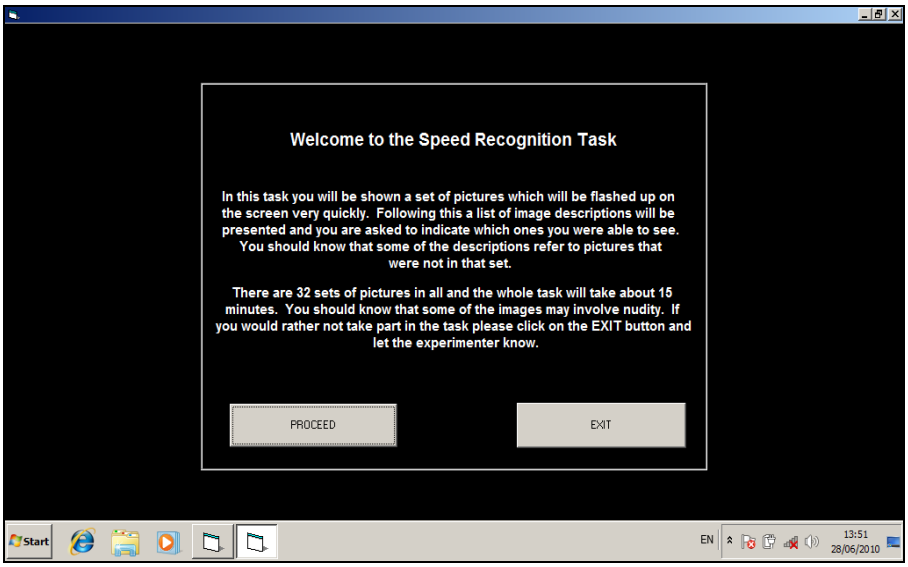


Figure 33: Index Page of the Speed Recognition Task

On selecting the PROCEED button the participant is directed to the window displayed in Figure 34. Participants are reminded that they will be required to view images flashed rapidly on screen after which they will be required to identify which items they have seen from a list of image descriptors. Participants are instructed on how to operate the computer to present images and then instructed to select CONTINUE.

On selecting CONTINUE the participant is directed to the first block of the RSVP assessment, displayed in Figure 35. This page consisted of a black screen with a small box in the upper left hand corner.

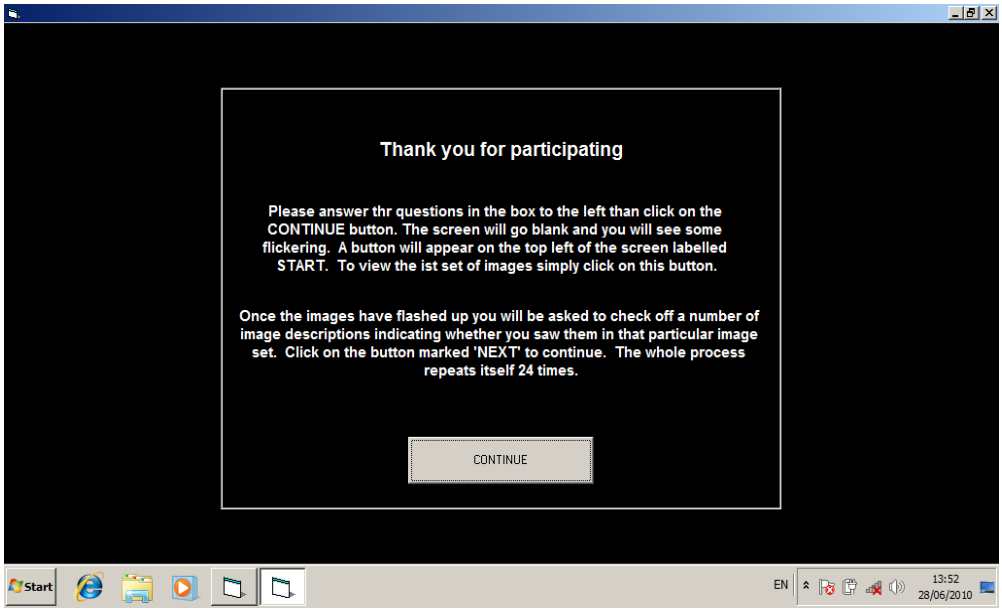


Figure 34: Instructor Page of the RSVP

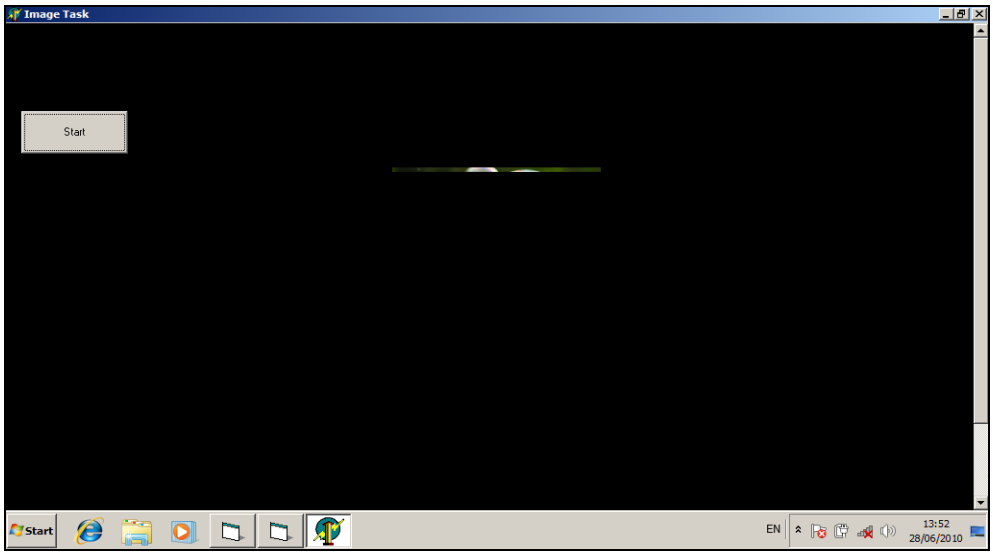


Figure 35: Black Start Screen on the Rapid Serial Visualisation Task

On clicking “Start”, the first block of the assessment is presented in which 10 images are rapidly displayed in the centre of the screen. Figure 36 shows an example of a single image from a block.

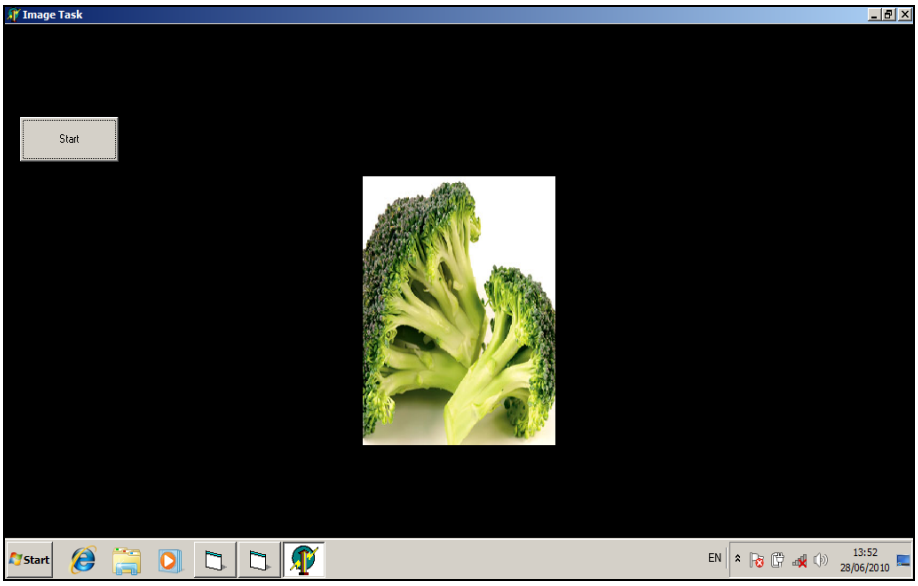


Figure 36: The First Assessment Block on the RSVP

After all 10 images have been presented the participant is automatically presented with a list of six image descriptors. Here participants are asked to indicate which images they have seen with the question "Which of the following did you see?" (See Figure 37). No time restriction is enforced on participants to complete this part of the task.

The image descriptors presented to participants at the end of each assessment block contained the following: the first image displayed, the last image displayed, the stimulus image (nude/clothed male/female), the target image (image that follows the stimulus image or "attentional blink"), the image that precedes the stimulus image and an image that was not presented in that particular assessment block. The order of image descriptors was randomised for each assessment block.

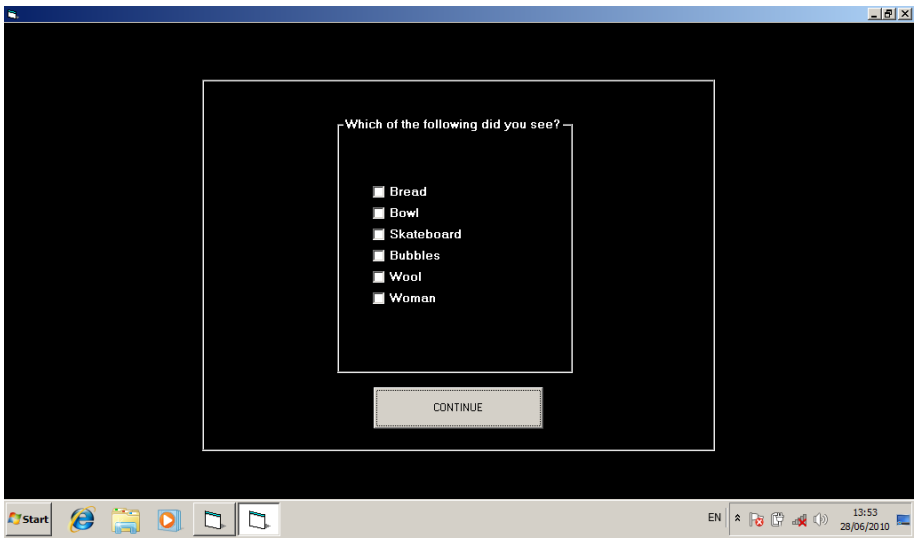


Figure 37: List of Image Descriptions for a Particular Assessment Block

Participants were not made aware of which images the image descriptors related to, but were reminded that some image descriptors refer to images that were not presented in that particular block. Once participants had indicated which items they had seen, by ticking the appropriate boxes, they were instructed to select CONTINUE. This directed participants to the second block of the task, where they were required to select "start" to view the next set of images. This procedure was repeated for all 32 assessment blocks. After completion of the final assessment block, participants are directed back to the index page of the UCC Assessment System.

All data was recorded in a form, compatible for import to PASW Statistics for data analysis.

5.5.4 Ethical Considerations. Both low risk participants and the offender populations that participated were fully informed of the nature of the assessment tasks prior to participating and ethical considerations were of upmost importance throughout. The following points were explained to each participant. Participation was voluntary and one had the right to refuse to participate and withdraw from the study at any time. It was

explained that all data was kept strictly confidential and that no identifying information would be tied to responses therefore participants would remain anonymous. It was further explained that under no circumstances would any reference be made to individuals in oral or written reports that could link them to this study. Before participating on the task, the participant was asked to read the consent form (see Appendix A) and given the opportunity to ask any additional questions. Before participating it was again stressed that all information was treated confidentially and that the information would be used for research purposes.

5.6 Results

It was hypothesised that nude over clothed stimulus items, that photos of real people over images and that young over old stimulus items would create a greater AB in both prison and the low risk samples.

The accuracy of blink stimulus identification was used for data analysis. A breakdown of the 32 clothed and nude images and clothed and nude photos is provided in Table 98.

Table 98: Categories of Photos and Images

Nude Female Young Photo (X2)	Nude Male Young Photo (x2)
Clothed Female Young Photo (X2)	Clothed Male Young Photo (x2)
Nude Female Young Image (X2)	Nude Male Young Image (x2)
Clothed Female Young Image (X2)	Clothed Male Young Image (x2)
Nude Female Old Photo (X2)	Nude Male Old Photo (x2)
Clothed Female Old Photo (X2)	Clothed Male Old Photo (x2)
Nude Female Old Image (X2)	Nude Male Old Image (x2)
Clothed Female Old Image (X2)	Clothed Male Old Image (x2)

This study aims to explore the use of clothed and nude images and clothed and nude photos in sexual preference assessment by examining the relative effects of both

nude and clothed images and nude and clothed photos in eliciting an attentional blink. The target image was used to investigate whether sexual attraction to the target image resulted in decreased accuracy in identifying the blink stimuli (the image immediately following the target image). *Similar to the viewing time measure, the data was also log transformed for this measure. Details of which can be found in Appendix D.

An analysis of Variance (ANOVA) was carried out. The between subject factors was the sex of the participant and the groups. The within subject factors were the age of the image (young/old), the gender of the image, the status of the image (photo/image) and the dress of the image (clothed/nude). A description of the main effects and interaction effects that were explored are provided in the Table 99.

Table 99: Main Effects and Interaction Effects -RSPV

Main effects (4)
Two- way interactions (13)
Three- way interactions (16)
Four-way Interactions (9)
Five- way Interactions (2)

Table 100: Main Effects -RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age of the Image (young/old)	.997	1	.997	.4.244	.043*	.053
Gender of Image	.581	1	.581	1.476	.228	.019
Status of Image (Real Photo//image)	5.183	1	5.183	11.115	.001*	.128
Dress of the Image (clothed/nude)	11.031	1	11.031	20.939	.000*	.216

*P<.05

The main effects of analysis of variance showed the following. The age of the image had a significant main effect (f=4.244, p=.043), the main effect of the gender of the image was not significant (f=1.476, p=.228), the status of the image had a significant

main effect (f=11.115, p=.001) and the main effect for the dress of the image was also significant (f=20.993, p<.0005). The main effects of analysis of variance can be seen in Table 100.

5.6.1 Two-Way Interactions: RSVP. The two-way interaction between the age of the image and the sex of the participant was not significant (f=.478, p=.497) (See Table 101). The two-way interaction between the age of the image x group was not significant (f=.257, p=.614). The two way interaction between the gender of the image x sex of the participant was not significant (f=.616, p=.435). The two-way interaction between the gender of the image x group was not significant (f=.684, p=.198).The interaction between the status of the image x sex of the participant was not significant (f=2.149, p=.267).The interaction between the status of the image x group was not significant (f=.001, p=.957). The interaction between the dress of the image x sex of the participant was not significant (f=.425, p=.517). The interaction between the dress of the image x group was not significant (f=1.424, p=.236). The interaction between the age of the image x gender of the image was not significant (f=.224, .638).The interaction between the age of the image x status of the image was not significant (f=.221, p=.639). The interaction between the gender of the image x status of the image was significant (f=.811, p=.006), the interaction between the gender of the image x dress of the image was significant (f=.4787,p=.032)and the interaction between the status of the image x dress of the image was significant (f=6.275,p=.014) (see Table 101).These interactions are displayed in figures 38-40.

Table 101: Two-Way Interactions - RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age of the Image x Sex of the participant	.122	1	.112	.478	.497	.006
Age of image x Group	.061	1	.061	.257	.614	.003
Gender of image x Sex of participant	.243	1	.243	.616	.435	.008
Gender of Image x Group	.663	1	.663	1.684	.198	.002
Status of Image x Sex of participant	.580	1	.580	1.249	.267	.016
Status of Image x Group	.000	1	.000	.001	.957	.000
Dress of image x Sex Participant	.224	1	.224	.424	.517	.006
Dress of the image x Group	.750	1	.750	1.424	.236	.018
Age of the Image x Gender of Image	.0831	1	.083	.224	.638	.003
Age of Image x Status of Image	.070	1	.070	.221	.639	.003
Gender of Image x status of image	3.771	1	3.771	8.112	.006*	.097
Gender of image x dress of the image	.947	1	.947	4.787	.032*.	.059
Status of the image x dress of the image	1.811	1	1.811	6.275	.014*	.076

*P<.05

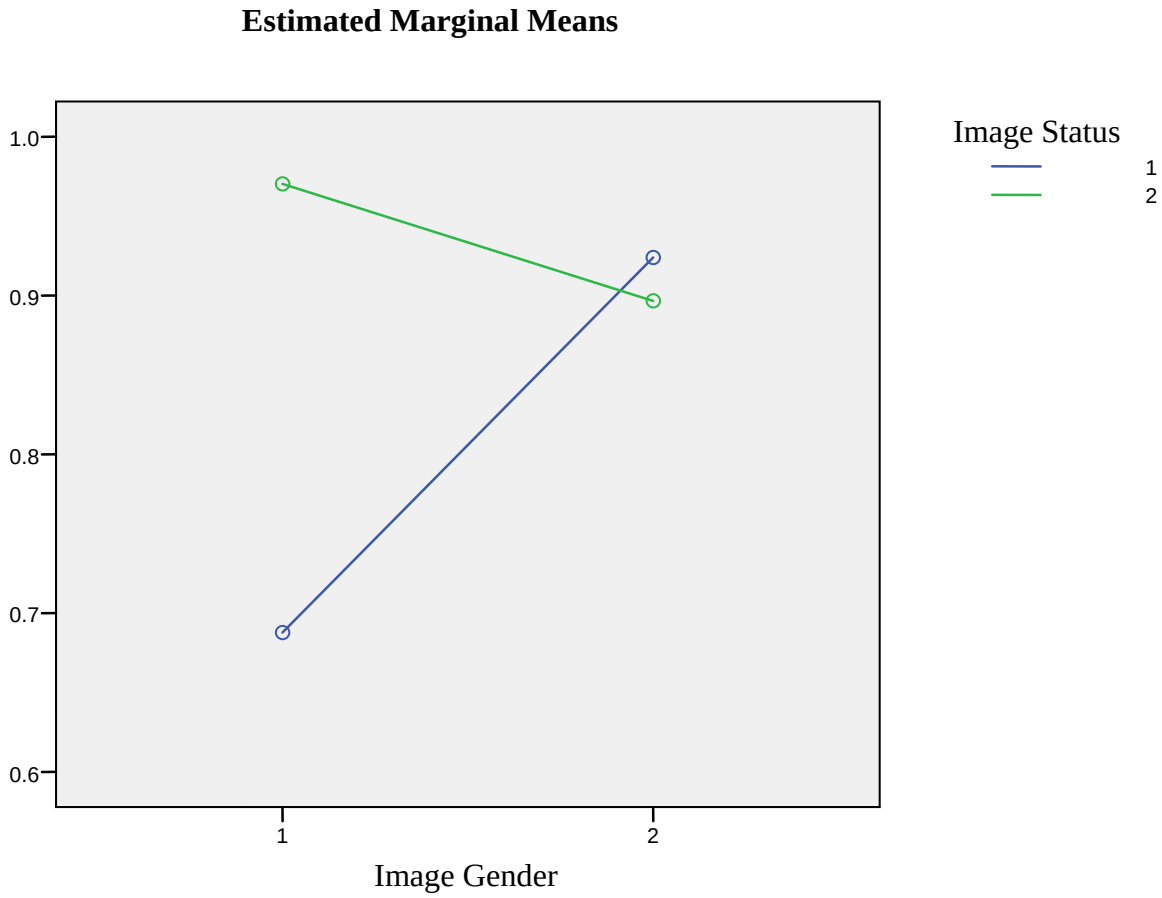
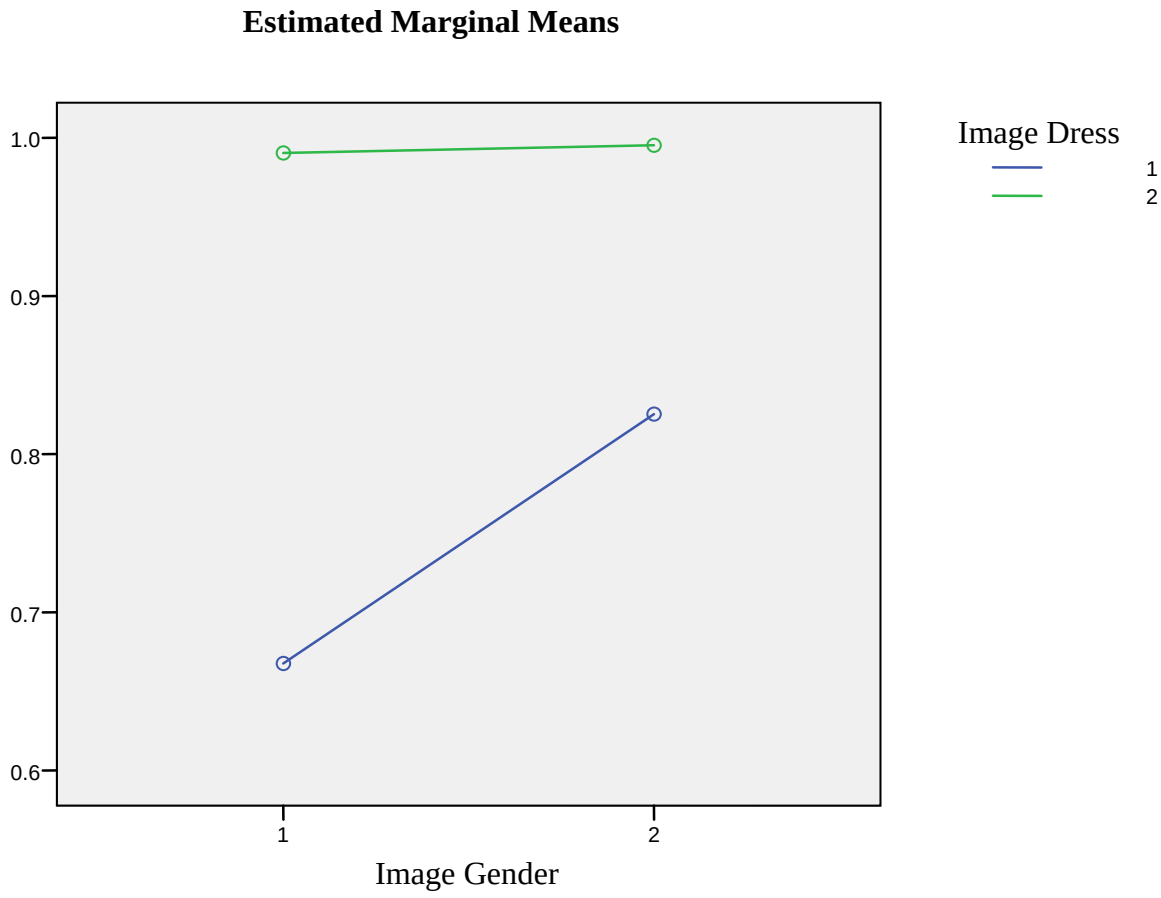


*Image Status: *Status image: 1=Real Photo/person, 2=Image person.

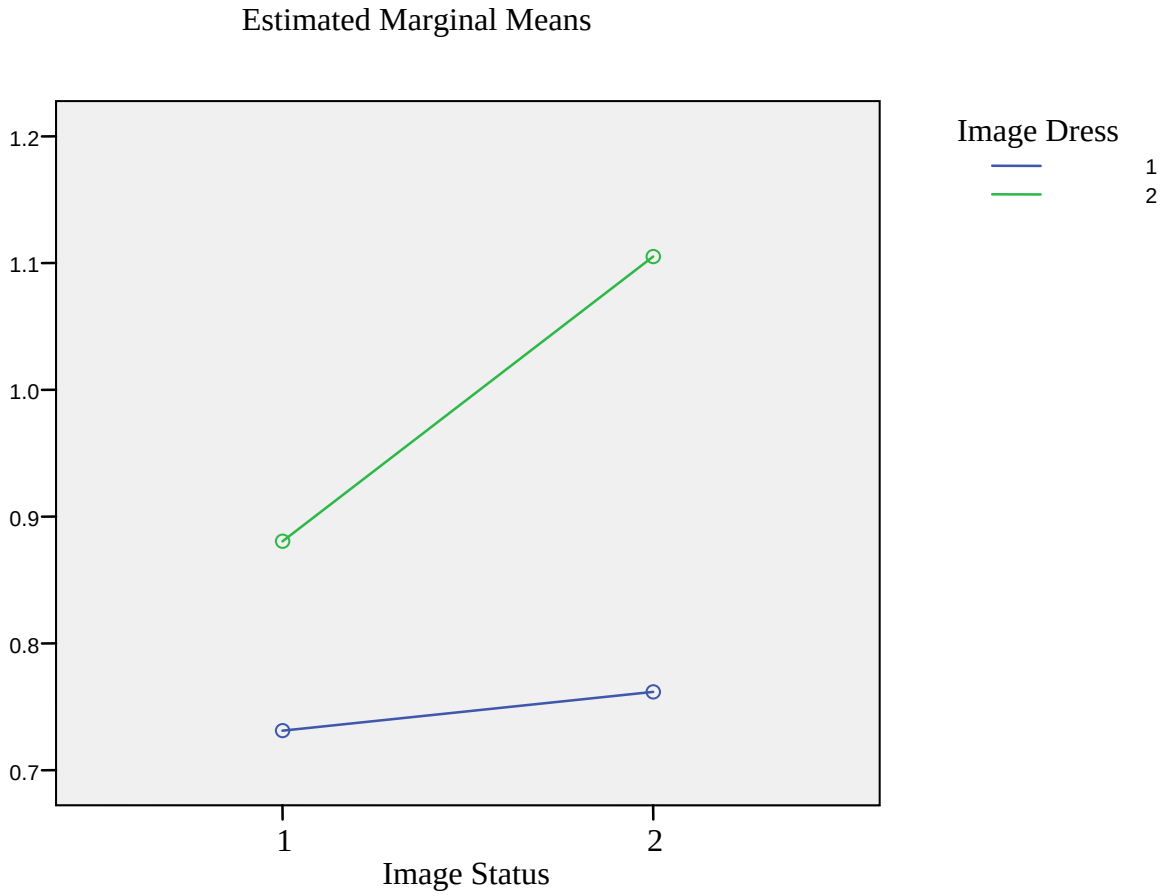
*Image Gender: 1=Female image, 2=Male Image.

Figure 38: Two-way interaction: Image gender x image status



* Image Dress: 1=nude, 2=Clothed. * Image Gender: 1=Female, 2=Male.

Figure 39: Two-way interaction: Image gender x image dress.



Two-way interaction: Image Status x Image Dress. * Image Dress: 1=nude, 2=clothed.

Figure 40: Two-way interaction: Image Status x Image Dress.

Three- way interactions of analysis of variance are presented in Table 102. The interaction between the age of the image x gender of the image x sex of the participant was not significant. (f=2.402, p=.125). The age of the image x gender of the image x group was not significant (f=.377, p=.541). The interaction between the age of the image x status of the image x sex of the image was not significant (f=1.494, p=.225). The age of the image x the status of the image x group interaction was not significant. (f=.719, p=.339). The gender of the image x the status of the image x sex of the participant

interaction was not significant (f-.953, p=.116). The gender of the image x status of the image x the group interaction was also not significant (f=.139, p=.710). The interaction between the age of the image x gender of the image x the status of the image (f=.042, p=.839) and the interaction between the age of the image x dress of the image x sex of the participant were also not significant (f=3.830, p=.054). The interaction between the age of the image x image dress x group was also not significant (f=.075, p=.784) (see Table 100). The interaction between the gender of the image x image dress and the sex of the participant (f=2.404, p=.125) and the interaction between gender of the image x dress of the image x group were also not significant (f=.102, p=.750). The interaction between the status of the image x the dress of the image x sex of the participant (f=.001, p=.981) and the interaction between the status of the image x the image dress x group was also not significant (f=.605, p=.439).The three-way interaction between the gender of the image, the status of the image x the image dress was not significant (f=.382, p=/538).

However, there was a significant three-way interaction found between the age of the image x the gender of the image x dress of the image (f=13.455, p<.0005). The interaction between the age of the image, the status of the image and the image dress (f=26.422, p<.0005) was significant. (See figures 41-44).

Table 102: Three -Way Interactions -RSVP

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Image age x image gender x sex participant	.894	1	.894	2.402	.125	.031
Image age x image gender x group	.141	1	.141	.377	.541	.005
Image age x image status x sex of participant	.476	1	.476	1.494	.225	.019
Image age x image status x group	.229	1	.229	.719	.339	.009
Image gender x image status x sex of the participant	.907	1	.907	1.953	.166	.025
Image gender x image status x Group	.065	1	.065	.139	.710	.002
Image age x Image gender x image status	.020	1	.020	.042	.839	.001
Image age x image dress x sex of the participant	1.291	1	1.291	3.830	.054	.048
Image age x image dress x group	.025	1	.025	.075	.784	.001
Image gender x image dress x sex of the participant	.476	1	.476	2.404	.125	.031
Image gender x image dress x group	.020	1	.020	.102	.750	.001
Image age x image gender x image dress	.5714	1	.5714	13.455	.000*	.150
Image status x image dress x sex of the participant	.000	1	.000	.001	.981	.000
Image status x image dress x group	.175	1	.175	.605	.439	.008
Image Age x Image status x Image Dress	9.663	1	9.663	26.422	.000*	.258
Image gender x image status x image dress	.122	1	.122	.382	.538	.005

*P<.05

*Image Gender: 1=Female image, 2=Male Image.
*Image Age: 1=Young, 2=Old.

Figure 41: Three-way interaction: Image Age x Image Gender x Image dress (Nude).

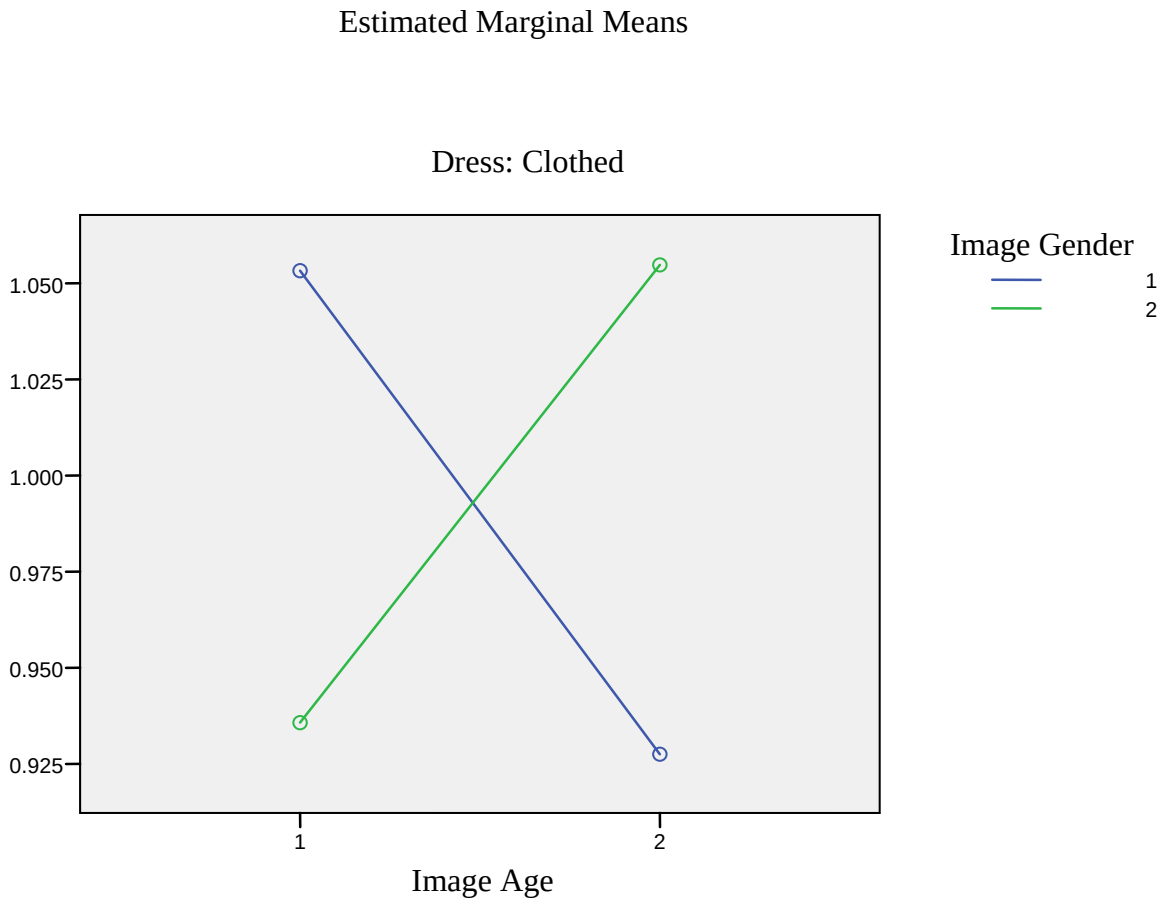


*Image Gender: 1=Female image, 2=Male Image.
*Image Age: 1=Young, 2=Old.

Figure 42: Three-way interaction: Image Age x Image Gender x Image Dress (Clothed)*.

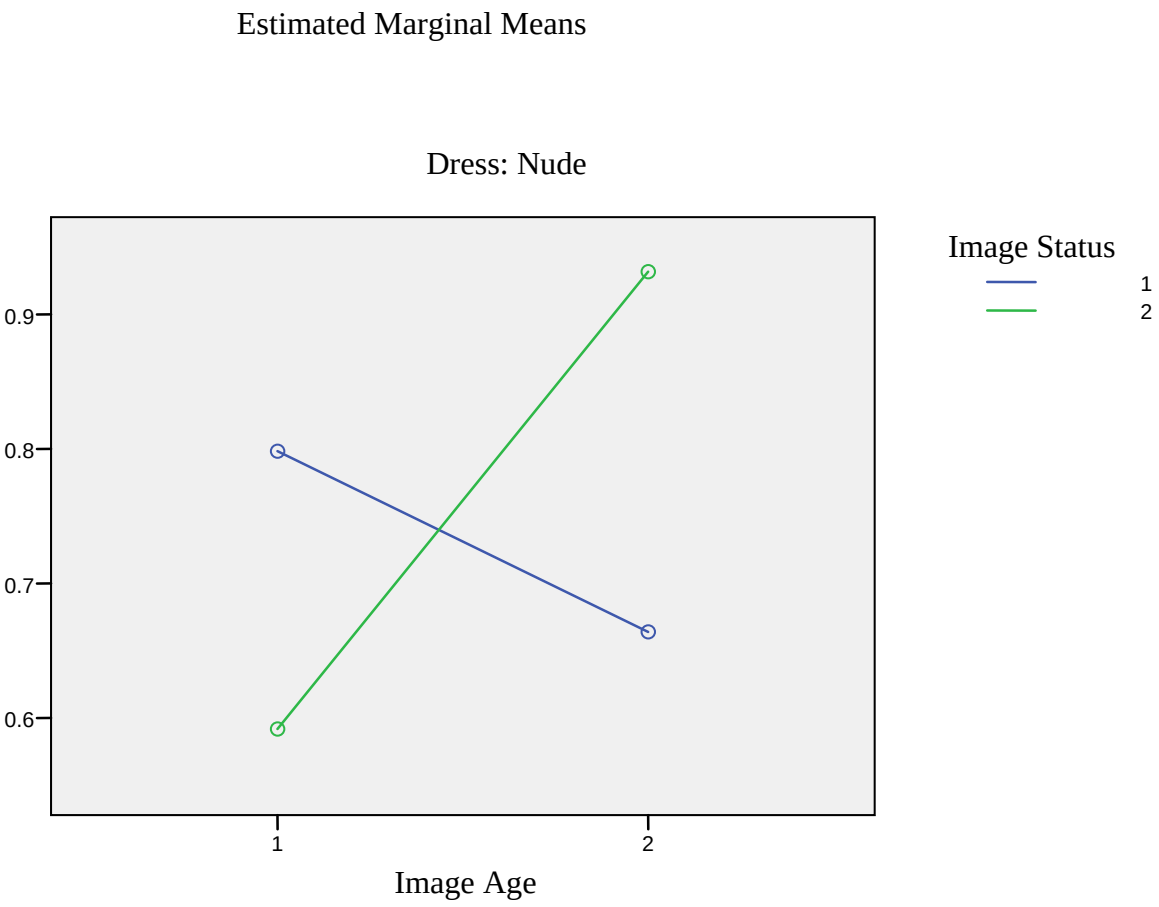
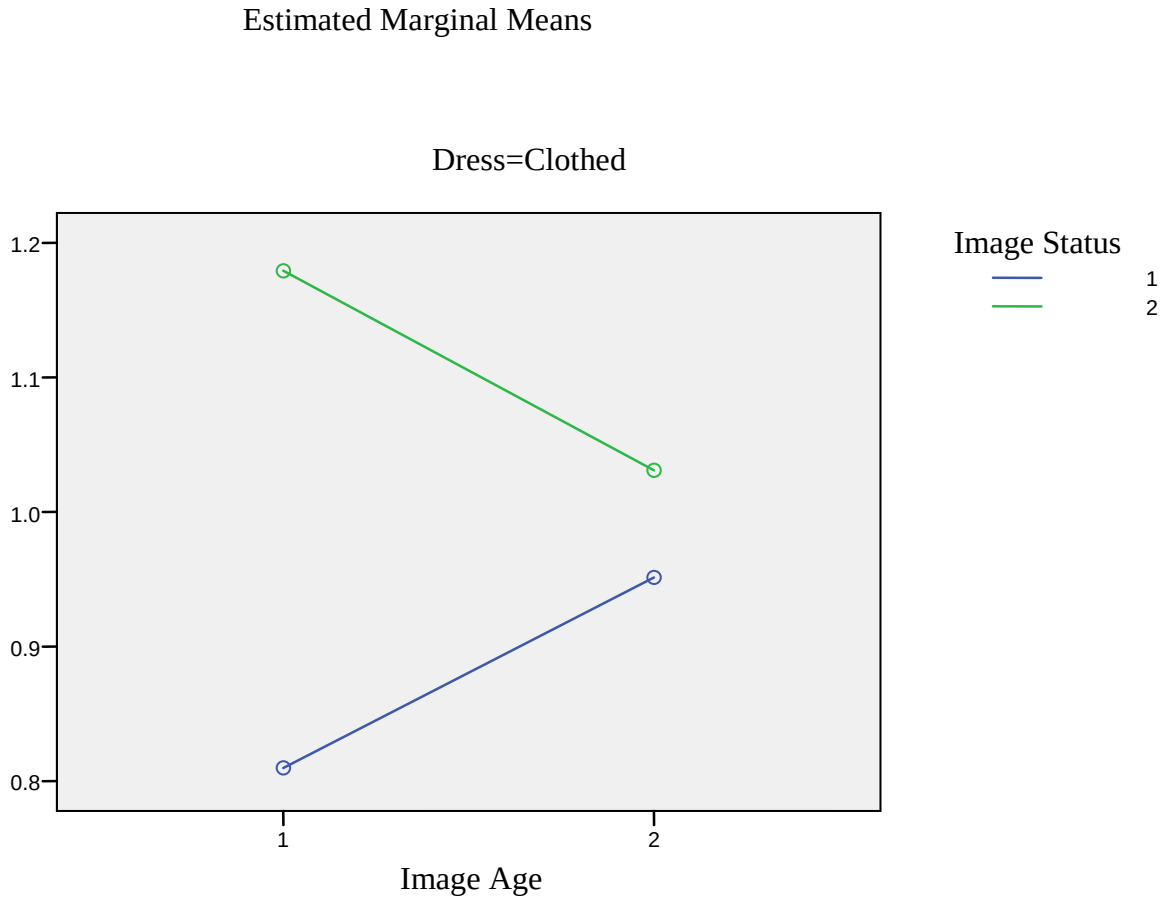


*Image Status: 1=Photo/person, 2=Image Person. *Image Age: 1=Young, 2=Old

Figure 43 Three-way interaction: Image Age x Image Status x Image Dress. (Nude).



* Image Age: 1= young, 2=old. Image Status: 1= Photo/person, 2=Image person.

Figure 44: Three-way interaction: Image Age x Image Status x Image Dress (Clothed).

Four- way interactions are presented in Table 103. The age of the image x gender of the image x status of the image x sex of the participant did not show any significant interaction (f=.029, p=.865). The interaction between the age of the image x gender of the image x status of the image x group did not show any significant interaction (f=.773, p=.382). The interaction between the age of the image x the gender of the image x dress of the image x the sex of the participant (f=.007, p=.936) and the interaction between the age of the image x gender of the image x dress of the image x

group (f=.002, p=.963) did not show any significant interaction. There was no significant interaction between the age of the image x status of the image x dress of the image x the sex of the participants (f=.020, p=.888) or between the age of the image x status of the image, x dress of the image or the group (f=.539, p=/465). There was no significant interaction found between the gender of the image x status of the image x dress of the image x sex of the participant (f=.976, p=.164). There was no significant interaction found between the gender of the image x status of the image x the dress of the image x groups (f=.071, p=.790). There was however a significant interaction found between the age of the image x the gender of the image x the status of the image x dress (f=8.46, p=.005).

Table 103: Four way Interactions - RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared.
Image age x image gender x image status x sex of the participant	.041	1	.041	.029	.865	.000
Image age x image gender x image status x Group	.369	1	.369	.773	.382	.010
Image age x image gender x image dress x sex of participant	.003	1	.003	.007	.936	.000
Image age x image gender x image dress x group	.001	1	.001	.002	.963	.000
Image age x image status x image dress x sex of the participant	.007	1	.007	.020	.888	.000
Image age x image status x image dress x group	.197	1	.197	.539	.465	.007
Image gender x image status x image dress x sex of the participant.	.632	1	.632	1	.976	.025
Image gender x image status x image dress x group	.023	1	.023	.071	.790	.001
Image age x image gender x image status x image dress	2.678	1	2.678	8.46	.005*	.100

*P<.05

Five- way interactions, presented in Table 104, revealed the following the interaction between the age of the image, the gender of the image x the status of the image x the image dress x the sex of the participant was significant (f=4.514, p=.037) The interaction between the age of the image x the gender of the image x the status of the image x the image dress x the group was not significant (f=1.338, p=.251).

Table 104: Five way Interactions - RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Image age x image gender x image status x image dress x sex of the participant	1.429	1	1.429	4.514	.037*	.056
Image age x image gender x image status x image dress x group	.423	1	.423	1.338	.251	.017

*P<.05

Test of between subject's effects are shown in Table 105. The sex of the participant was not significant (f=1.125, p=.292). The group was not significant (f=.500, p=.006).

Table 105: Between Subjects Effects

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Sex of participant	3.334	1	3.334	1.125	.292	.015
Groups (low risk/Non Sexual Offenders)	1.364	1	1.364	.460	.500	.006

*P<.05

Bonferonni post hoc tests were conducted to explore further the five- way interaction between the age of the image x the image gender, x the status of the image x the image dress and the sex of the participants. (The mean difference is significant at the 0.5 level on the Bonferonni post-hoc tests).*The mean attentional blink is based on the

number of correct target identifications made after the presentation of the stimulus image.

Amongst the males, the mean attentional blink (AB) (mean=.581) was greater for nude young female photos than for clothed female young photos (mean=.682) (see Table 106). This difference however was not found to be significant. For females the mean blink was greater (mean=.775) for young female nude photos than for clothed female young photos (mean= .873), however as with the males this difference was also not significant.

Table 106: Mean Difference AB (Young Female Photos Nude/Clothed

Source Young Female Photos	**Image Dress**	**Mean Difference**	**Sd. Error**	**Sig**	**95% Confidence Interval**
Males	Nude v Clothed	-.101	.114	.380	-.329-.127
Females	Nude v Clothed	-.098	.187	.744	-.433-.311

*P<.05

As can be seen from the Table 107, for males young female nude images caused a greater attentional blink (mean=.253) than did young female clothed images (mean=1.407). This difference was found to be significant. For the females nude young female images also caused a greater attentional blink (mean=.856) than did young female clothed images (mean=1.339). This difference was also found to be significant.

Table 107: Mean Difference AB (Young Female Images Nude/Clothed)

Source Young Female Images	**Image Dress**	**Mean Difference**	**Sd. Error**	**Sig**	**95% Confidence Interval**
Males	Nude v Clothed	-1.154	..125	.000*	-1.403--.905
Females	Nude v Clothed	-.483	.204	.020*	-.890- -.077

*P<.05

The differences found when examining young male nude and clothed photos are presented in Table 108. Amongst the male participants nude young male photos causes a greater attentional blink (mean=.952) than did clothed young male photos (mean=.975) However, this difference was not found to be significant. Amongst the females clothed young male photos causes a greater attentional blink (mean=.620) than did young male nude photos (mean=1.014). This difference was found to be significant.

Table 108: Mean Difference AB (Young Male Photos Nude/Clothed

Source Young Male Photos	**Image Dress**	**Mean Difference**	**Sd. Error**	**Sig**	**95% Confidence Interval**
Males	Nude v Clothed	-.023	.103	.825	-.227-.182
Females	Nude v Clothed	-3.94	.167	.021*	-.727-.060

*P<.05

Males showed a greater attentional blink (AB) (mean=.755) for nude young males images than they did for clothed male young images (mean=.899) (see Table 109). This difference however was not found to be significant. Females had a greater attentional blink (mean=.854) for nude young male images than they did for young male clothed images (mean=1.153), however again this difference was not found to be significant.

Table 109: Mean Difference AB (Young Male Images Nude/Clothed)

Source Young Male Images	**Image Dress**	**Mean Difference**	**Sd. Error**	**Sig**	**95% Confidence Interval**
Males	Nude v Clothed	-.144	.132	.281	-.408-.120
Females	Nude v Clothed	-.299	.216	.171	-.729-.132

*P<.05

In the category of female old photos, it was found that males had a greater attentional blink for nude old female photos (mean=.485) than for old female clothed

photos (mean=.861) (see Table 110). This difference was found to be significant. Females also had a greater attentional blink for female old nude photos (mean=.723) than for female old clothed photos (mean=1.032). This difference was not significant.

Table 110: Mean Difference AB (Old Female Photos Nude/Clothed

Source Old Female Photos	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	Nude v Clothed	.376	.199	.002*	-613-.140
Females	Nude v Clothed	-.309	.194	.116	-.695-.078

*P<.05

On the old female image category, amongst the males it was found that clothed female old images caused a greater attentional blink (mean=.957) than did nude female old images (mean=1.134) (see Table 111). This difference was not found to be significant. It was found that in the females also clothed old female images caused a greater attentional blink (mean=1.048) than did old female nude images (mean=1.150). This difference was also found not to be significant.

Table 111: Mean Difference AB (Old Female Images Nude/Clothed)

Source Old Female Images	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	Nude v Clothed	.-.177	.133	.188	-.442-.088
Females	Nude v Clothed	-101	.271	.642	-534-.332

*P<.05

The mean difference attentional blink (AB) for the old male photos and nude or clothed category are presented in Table 112. In this category males had a greater attentional blink to nude old male photos (mean=.811) than for male old clothed photos (Mean=.957). This difference was not significant. Nude male old photos caused a greater attentional blink for females (mean=.799) than did male old clothed photos

(mean=.957) (see Table 112). This difference was found to be significant.

Table 112: Mean Difference Attentional Blink (Old Male Photos Nude/Clothed)

Source Old Male Photos	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	Nude v Clothed	-.146	.100	.145	-.345--.052
Females	Nude v Clothed	-.158	.163	.018*	-716- .069

*P<.05

A greater attentional blink was found in the males for nude male old images (mean=.715) than for clothed old male images (mean=.939. For the females also the nude old male image caused a greater attentional blink (mean=.553) than did old male clothed images (mean=.925). Again theses differences were not found to be significant.

Table 113: Mean Difference AB (Old Male Images Nude/Clothed)

Source Old Male Images	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	Nude v Clothed	-.225	.144	.122	-.511-.061
Females	Nude v Clothed	-.372	.235	.117	-.839-.096

Table 114: Means and standard deviations for participants (Nude Female images)

Source	Participant	Mean	St. Deviation	N
Nude Female young photo	Low risk male	.5556	.61570	18
	Nonsexual offender	.6061	.74747	33
	Female low risk	.7500	.58535	28
Nude female young image	Low risk male	.6667	.6859	18
	Nonsexual offender	.6970	.7282	33
	Female low risk	.8214	.77237	28
Nude female old photo	Low risk male	.1111	.32338	
	Nonsexual offender	.3939	.65857	
	Female low risk	.7143	.80999	28
Nude female old image	Low risk male	1.3889	.60768	18
	Nonsexual offender	1.4242	.70844	33
	Female low risk	1.3214	.66964	28

Table 115: Means and standard deviations for participants (Nude Males images)

Source	Participant	Mean	St. Deviation	N
Nude male young photo	Low risk male	.8889	.47140	18
	Nonsexual offender	1.060	.70442	33
	Female low risk	.9286	.66269	28
Nude male young image	Low risk male	1.556	.63914	18
	Nonsexual offender	.9394	.70442	33
	Female low risk	.6786	.72283	28
Nude male old photo	Low risk male	.7222	.75190	18
	Nonsexual offender	.7879	.81997	33
	Female low risk	.8214	.90487	28
Nude male old image	Low risk male	.8889	.83235	18
	Nonsexual offender	.9091	.72300	33
	Female low risk	1.1429	.65060	28

Table 116: Means and standard deviations for participants (Clothed female images)

Source	Participant	Mean	St. Deviation	N
Clothed Female young photo	Low risk male	.3333	.48507	18
	Nonsexual offender	.6364	.74239	33
	Female low risk	.5714	.50395	28
Clothed female young image	Low risk male	.722	.75190	18
	Nonsexual offender	1.0000	.70711	33
	Female low risk	.8929	.78595	28
Clothed female old photo	Low risk male	1.0556	.80237	
	Nonsexual offender	1.2121	.69631	
	Female low risk	1.0714	.76636	28
Clothed female old image	Low risk male	.9444	.80237	18
	Nonsexual offender	.9697	.91804	33
	Female low risk	1.0357	.79266	28

Table 117: Means and standard deviations for participants: (Clothed male images)

Source	Participant	Mean	St. Deviation	N
Clothed male young photo	Low risk male	.8333	.70711	18
	Nonsexual offender	.7879	.54500	33
	Female low risk	.8214	.61183	28
Clothed male young image	Low risk male	.9444	.63914	18
	Nonsexual offender	.9697	.76994	33
	Female low risk	1.1786	.66964	28
Clothed male old photo	Low risk male	.6111	.77754	
	Nonsexual offender	.8182	.84611	
	Female low risk	.8214	.81892	28
Clothed male old image	Low risk male	1.0000	.840717	18
	Nonsexual offender	.8788	.85723	33
	Female low risk	1.3571	.82616	28

5.6.2 Considerations. Similar to the viewing time paradigm, the group and the gender of the participants were merged so that the following could be explored. Males in the low risk category, males in the nonsexual offender group and the females in the low risk group (see Table 118).

Table 118: Groups and Gender of Participants - RSVP

Males in the Low Risk Group
Females in the low Risk Group
Males in the Non Sexual Offender Group

An AVOVA as outlined above was carried out. The between subjects effects were the combined sex of the participant and the group. Within subject factors were the age of the image (young/old), the gender of the image, the status of the image (image/photo) and the dress of the image (nude/clothed).

Table 119: Main Effects - RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age of the Image (young/old)	.731	1	.731	3.114	.082	.039
Gender of Image	1.955	1	1.955	4.965	.029*	.061
Status of Image (Real Photo/image)	4.820	1	4.820	10.374	.002*	.120
Dress of the Image (clothed/nude)	17.977	1	17.977	34.125	.000*	.310

*P<.05

As is illustrated in Table 119, the main effect of the age of the image was not significant (f=.3114, p=.082). The main effects of the gender of the image (f=4.965, p=.029) the status of the image (f=10.374, p=.002) and the main effect of the dress of the image (f=34.125, p<.0005) were all significant.

Table 120: Two way Interactions - RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age of the image x combined sex of the participant and group	.114	2	.057	.243	.785	.006
Gender of image x combined sex of participant and group	.664	2	.332	.843	.434	.002
Status of image x combined sex of participant and group	.992	2	.496	1.068	.349	.027
Dress of image x combined sex participant and group	.758	2	.379	.720	.490	.019
Age of the image x gender of image	.326	1	.326	.876	.352	.001
Age of image x status of image	.629	1	.629	1.976	.164	.025
Gender of image x status of image	7.106	1	7.106	15.30	.000*	.168
Age of image x dress of the image	.834	1	.834	2.473	.120	.032
Gender of image x dress of image	1.728	1	1.728	8.737	.004*	.103
Status of image x dress of the image	2.785	1	2.785	9.649	.003*	.113

*P<.05

As can be seen from the Table 120, the two-way interaction between the age of the image x combined sex of the participant and group (f=.243,p=.785), gender of the image x combined sex of the participant and group (f=.843,p=.434), image status x combined sex of the participant and group (f=1.068,p=.349), the image dress x combined sex of the participant and group (f=.720,p=.490) were all not significant.

The two- way interaction between image age and image gender (f=.876,p=.352) and the image age x image status (f=1.976,p=.164) were also not significant (see Table 100). The interaction between the image age and image dress was not significant (f=2.473, p=.120). The significant two-way interactions were as follows, image gender x image status (f=15.307, p<.0005), image gender x image dress (f=.8737, p=.004) and the image status x image dress (f=9.649, p=.003).

As can be seen from Table 121, the interaction between the image age x image gender x combined sex of the participant and the group was significant (f=3.278, p=.043). The three-way interaction between the image age x image gender x image dress was also significant (f=16.884, p<.0005), as was the three-way interaction between the image age x image status x image dress (f=29.534, p<.0005). All other three way interactions were not significant. (See table 121). These interactions are displayed in figures 45-47.

Table 121: Three-way Interactions - RSVP

Source	Type 111 Sum of Squares	df	Mean Squared	F	Sig	Partial Eta Squared
Image age x image gender x combined sex of the participant and group	2.442	2	1.221	3.278	.043*	.079
Image age x image status x combined sex of the participant and group	.479	2	.239	.752	.475	.019
Image gender x image status x combined sex of the participant and group	1.101	2	.551	1.186	.311	.030
Image age x image gender x image status	.214	1	.214	.448	.505	.006
Image age x image dress x combined sex of the participant and group	1.797	2	.898	2.665	.076	.066
Image gender x image dress x combined sex of the participant and group	1.021	2	.510	2.581	.082	.064
Image age x image gender x image dress	7.170	1	7.170	16.884	.000*	.182
Image status x image dress x combined sex of the participant and group	2.72	2	.139	.480	.621	.021
Image age x image status x image dress	10.801	1	10.801	29.534	.000*	.280
Image gender x image status x image dress	.000	1	.000	.001	.970	.000

*P<.05

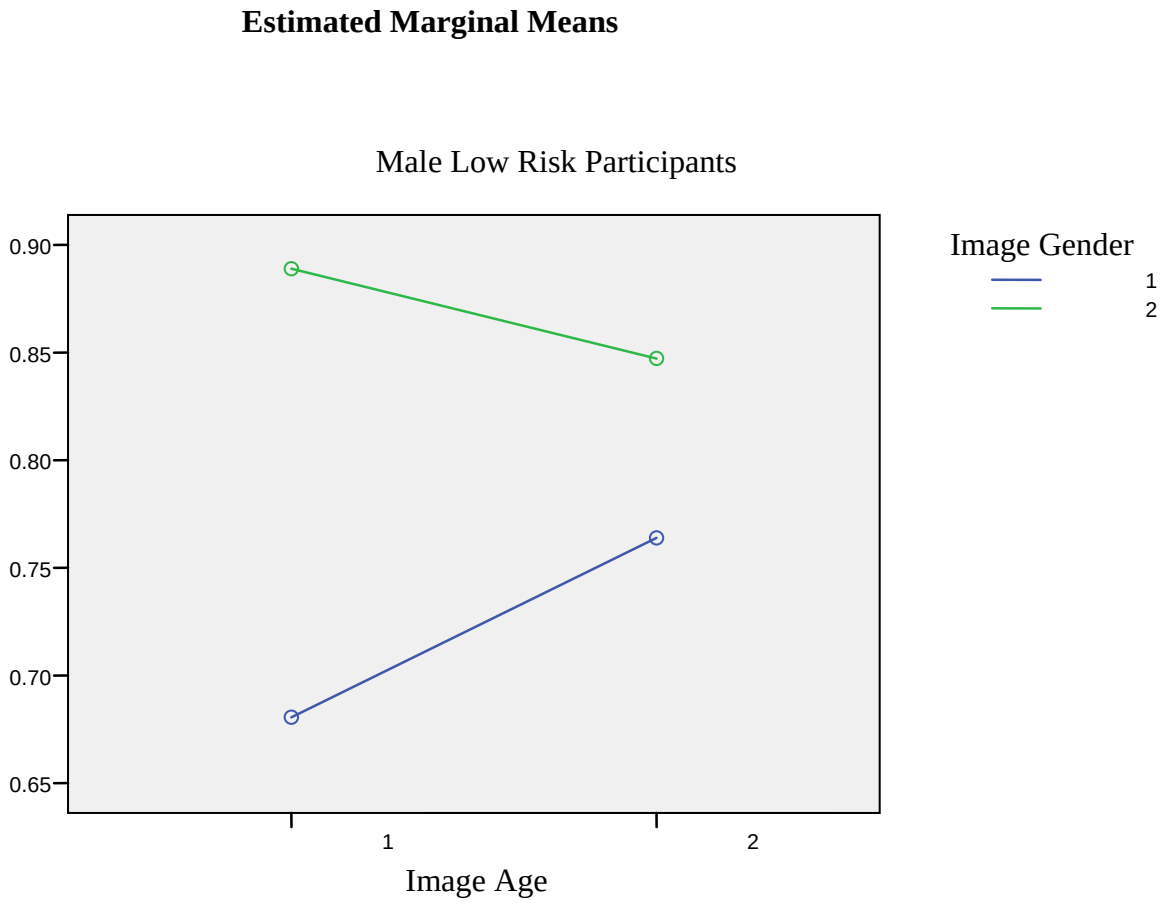


*Image Age: 1=young, 2=Old. *Image Gender: 1= Female, 2=Male.

Figure 45: Three-way interaction: Image Age x Image Gender x Male low risk participants.

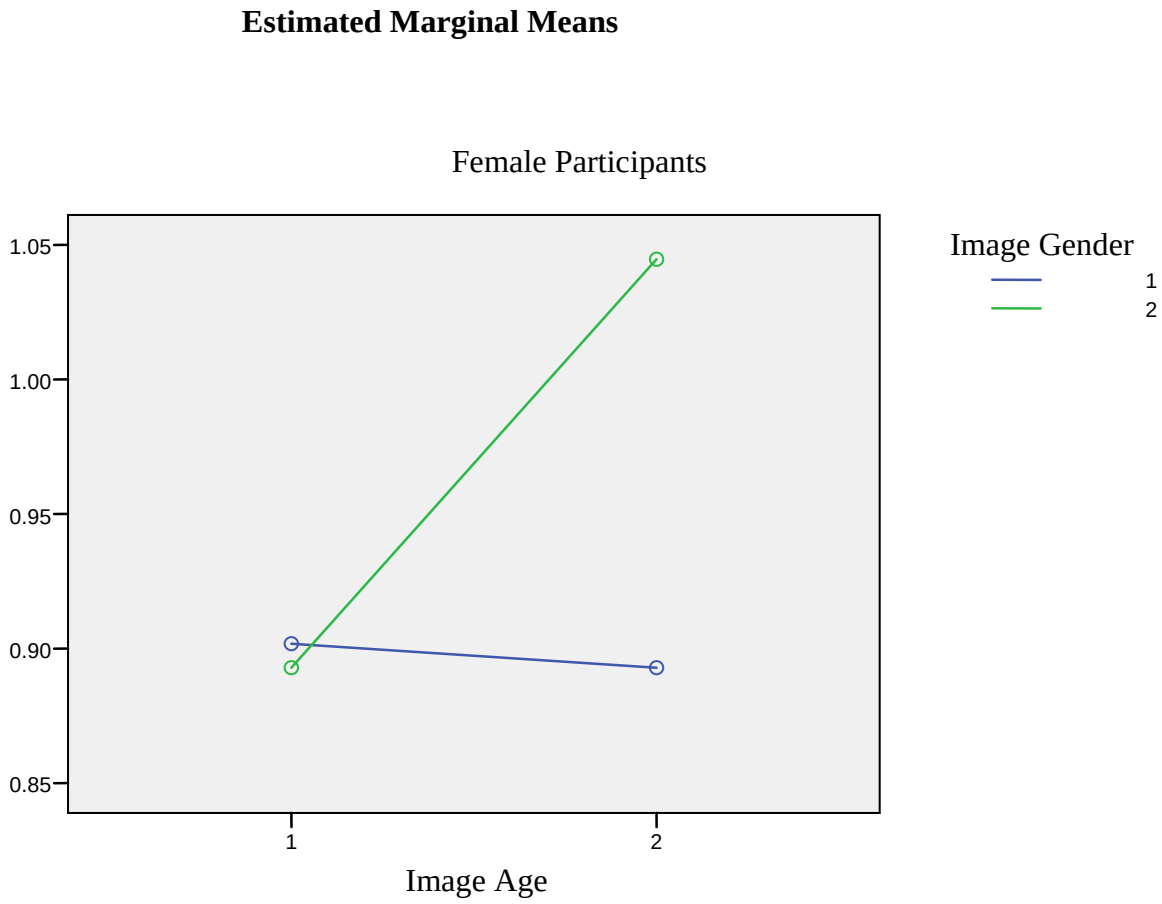


*Image Age: 1=young, 2=Old. *Image Gender: 1= Female, 2=Male.

Figure 46: Three-way interactions: Image Age x Image Gender x Female participants.

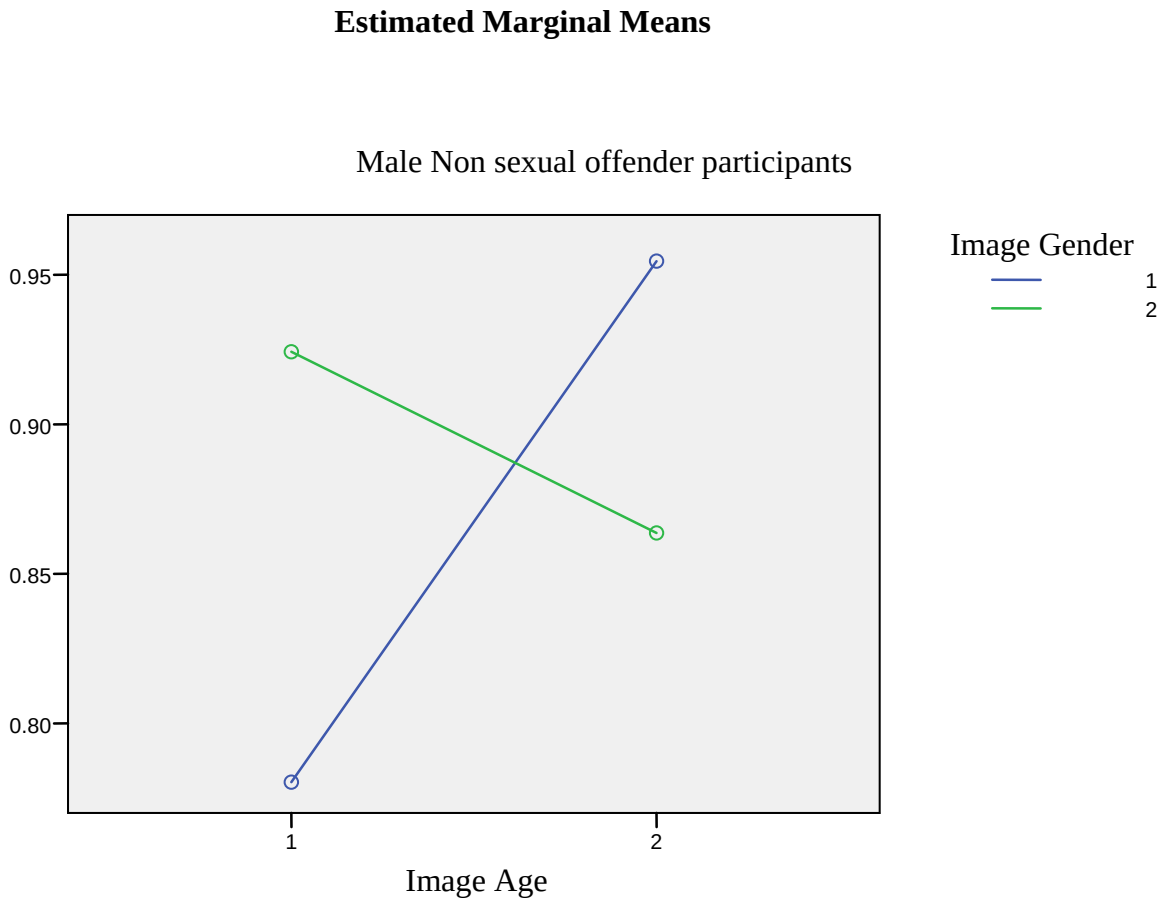


*Image Age: 1=young, 2=Old. *Image Gender: 1= Female, 2=Male.

Figure 47: Three-way interaction: Image Age x Image Gender x Male nonsexual offenders.

When looking at the four way interactions only one was found to be significant that was the four –way interaction between the image age x image gender x image status x image dress (f=21.360,p<.0005) (see Table 122). All other four-way interaction was not significant. They are as follows. The age of the image x status of image x dress of the image x combined sex of the participant and group (f=.586, p=.569). The age of the image x gender of the image x dress of the image x combined sex of the participant and

the group (f=.003, p=.997). The image gender x image status x image dress x combined sex of the participant and group (f=1.330, p=.278). The age of the image x gender of the image x status of the image x combined sex of the participant and group (f=.506, p=.605).

Table 122: Four-way Interactions - RSVP

Source	Type 111 Sum of Squares	df	Mean Squared	F	Sig	Partial Eta Squared
Image age x image status x image dress x combined sex of participant and Group	.4152	2	.208	.568	.569	.015
Image Age x Image gender x image dress x combined sex of participant and group	.003	2	.001	.003	.997	.000
Image gender x image status x image dress x combined sex of participant and group	.831	2	.416	1.300	.278	.003
Image age x image gender x image status x image dress	6.760	1	6.760	21.360	.000*	.219
Image age x image gender x image status x combined sex of participant and group	.483	2	.242	.506	.605	.033

*P<.05

Table 123: Five - way Interactions -RSVP

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta squared
Image age x image gender x image status x image dress x combined sex of the participant and group	1.445	2	.723	2.283	.109	.057

*P<.05

As can be seen the five –way interaction between the image age x image gender x image status x image dress x combined sex of the participant and group was not significant (f=2.283, p=.109) (see Table 123).Tests of between subjects effects showed

that the combined sex of the participant and group effect was not significant (f=.562, p=.572).

The three-way interaction between the image gender x image dress x combined sex of the participant and group was explored further as when the data was log transformed this interaction became significant (see Appendix D Table 18). Bonferonni post-hoc tests revealed the following. In the male low risk population nude females caused a greater blink (mean=.143) than did clothed females mean=.249) (see Table 124). This difference was significant. Amongst the low risk females nude females caused a greater blink (mean=.215) than did clothed females (mean=.268). This was significant. Nude female images (mean=.191) caused a significantly greater blink in the male non- sexual; offenders than did clothed females (mean=.266).

Table 124: Mean Difference Attentional Blink Nude/Clothed Females

Source Females	Image Category type	Mean Difference	Std. Error	Sig	95% Confidence Interval
Male Low Risk	Nude/clothed	-.106	.025	.000*	-1.56-.057
Female Low Risk	Nude/clothed	-.054	.020	.008*	-.093-.014
Male Non Sexual Offenders	Nude/clothed	-.076	.018	.000*	-.039--.112

*P<.05

Nude male images (mean=.213) caused a significantly greater blink in the low risk males than did clothed males (mean=.261). Amongst the low risk female population nude males (mean=.229) caused a significantly greater blink than did clothed males (mean=.287).In the category of non sexual offending males, nude males caused a greater blink (mean=.233) than did clothed males (mean=.247). This difference was not significant (see Table 125).

Table 125: Mean Difference Attentional Blink Nude/Clothed Males

Source Males	Image Category type	Mean Difference	Std. Error	Sig	95% Confidence Interval
Male Low Risk	Nude/clothed	-.049	.024	.044*	-.096-.001
Female Low Risk	Nude/clothed	-.058	.019	.003*	-.096--.020
Male Non Sexual Offenders	Nude/clothed	-.014	.018	.446	-.049-.022

*P<.05

The significant three-way interaction between the image gender x image age x combined sex of the participant and group showed the following. In the male low risk sample young females created a greater blink (mean=.186) than old females (mean=.206). This difference was not significant. In the female low risk sample old females (mean=.241) created a greater blink than did young females (mean=.242), this difference was not significant. The male non sexual offender group had a significantly greater blink for young females (mean=.206) than for old females (mean=.251) (see Table 126).

Table 126: Mean Difference Attentional Blink for Young/Old Females

Source Females	Image Category type	Mean Difference	Std. Error	Sig	95% Confidence Interval
Male Low Risk	Young/old	-.0.02	.021	.367	-.063-.023
Female Low Risk	Young/Old	-.001	.017	.927	-.036-.033
Male Non Sexual Offenders	Young/Old	-.046	.016	.005*	-.077-.014

*P<.05

The males of the low risk sample had a greater blink for older males (mean=.229) than for young males (mean=.245). Females in the low risk group showed a greater blink for young males (mean=.240) over old males (mean=.275). In the male non sexual offender group, they showed a greater blink (mean=.232) for old male images over young male images (mean=.249) none of these differences were significant

(see Table 127).

Table 127: Mean Difference Attentional Blink for Young/Old Males

Source Males	Image Category type	Mean Difference	Std. Error	Sig	95% Confidence Interval
Male Low Risk	Young/Old	-.016	.023	.497	-.063-.031
Female Low Risk	Young/Old	-.036	.019	.062	-.073-.002
Male Non Sexual Offenders	Young/Old	-.017	.017	.322	-.052-.017

*P<.05

Using Bonferroni post Hoc Tests the four way interaction found between the image age x image dress x image status x image gender was further explored. Young female nude images caused a greater (mean=.406) attentional blink (AB) than did young female nude photos (mean=.637) (see Table 128). This difference was significant.

Table 128: Mean Difference AB (Young Female Nude Image/Photo)

Source	Image Category	Mean Difference	Std. Error	Sig	95% Confidence Interval
Young Female	Nude photos/Nude Images	-.231	.089	.021*	-.409-.053

*P<.05

Young female clothed photos caused a greater blink (mean=.728) than did young female clothed images (mean=1.378) (see Table 129). This difference was significant.

Table 129: Mean Difference AB (Young Female Clothed Image/Photo)

Source	Image Category	Mean Difference	Std. Error	Sig	95% Confidence Interval
Young Female	Clothed Photos/Clothed Images.	.650	.97	.000*	-.843-.456

*P<.05

Young male nude images caused a greater blink (mean=.777) than did young male nude photos (mean=.959) (see Table 130). This difference was not significant.

Young male clothed photos (mean=.891) caused a greater blink than did young male clothed images (mean=.980) (see Table 131). This difference was not significant.

Table 130: Mean Difference AB (Young Male Nude Image/Photo)

Source	Image Category	Mean Difference	Std. Error	Sig	95% Confidence Interval
Young Male	Nude Photos/Nude Images	-.182	.103	.081	-.387-.023

*P<.05

Table 131: Mean Difference AB (Young Male Clothed Image/Photo)

Source	Image Category	Mean Difference	Std. Error	Sig	95% Confidence Interval
Young Male	Clothed Photos/Clothed Images	-.087	.104	.393	-.296-.117

*P<.05

Old female nude photos caused a greater blink (mean=.514) than did old female nude images (mean=1.113) (see Table 132). This difference was found to be significant. Old female clothed photos caused a greater blink (mean=8.72) than did old female clothed images (mean=.983) (see Table 133). This difference was not significant.

Table 132: Mean Difference AB (Old Female Nude Image/Photo)

Source	Image Category	Mean Difference	Std. Error	Sig	95% Confidence Interval
Old Female	Nude photos/nude Images	.599	.093	.000*	-7.85-.414

*P<.05

Table 133: Mean Difference AB (Old Female Clothed Image/Photo)

Source	Image Category	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Old Female	Clothed Photos/Clothed Images	-.112	.119	.351	-.348-.125

*P<.05

Old male nude images created a greater blink (mean=.750) than did old male nude photos (mean=.814) (see Table 134). Old male clothed photos caused a greater blink (mean=1.031) than did old male clothed images (mean=1.079). These differences were not found to be significant.

Table 134: Mean Difference AB (Old Male Nude Image/Photo)

Source	Image Category	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Old Male	Nude Photos/Nude Images				
		.064	.103	.538	-.270-.142

Table 135: Mean Difference AB (Old Male Clothed Image/Photo)

Source	Image Category	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Old Male	Clothed Photos/Clothed Images				
		.-.048	.096	.620	-.239-.143

*P<.05

5.7 Discussion

The hypothesis that nude over clothed stimulus items would create a greater AB was supported for male and female participants. The hypothesis that young versus old stimulus items would create a greater blink was supported for the prison sample. It was proposed that photos of real people over images of people would also induce a greater attentional blink in participants. This was supported for the block of stimulus items inclusive of young females and old females. In the young female block, clothed photos caused a greater AB than did clothed images. In the old female block, nude photos caused a greater AB than did nude images.

The inclusion of the rapid serial visual presentation paradigm served to explore its utility when comparing a normative and forensic population in its ability to detect sexual preference. Similar to the viewing time measure this measure was inclusive of a number of nonsexual offenders. (However, similar to the other studies outlined, the exact nature of these individuals' offences was not disclosed to the researcher). This study aimed to investigate the utility of rapid serial visual presentation assessment in determining sexual preference among a low risk population, and a nonsexual offending population. The accuracy of blink stimulus identification was used for data analysis. This study aimed to explore the use of clothed and nude images and clothed and nude photos in sexual preference assessment by examining the relative effects of both nude and clothed images and nude and clothed photos in eliciting an attentional blink. The images were inclusive of old and young males and females. The target image was used to investigate whether sexual attraction to the target image resulted in decreased accuracy in identifying the blink stimuli.

Amongst the male sample nude young female photos caused a greater mean attentional blink than did clothed female photos. Amongst the female sample it was also the young female nude photos that induced the greater blink. However both of these differences were not found to be significant. In the category of young female nude and clothed images the following was noted. Amongst the males, nude images caused a significantly greater blink than did clothed images. Amongst the females nude young female images also caused a significantly greater blink than did clothed images. This finding was similar to that of (Mac Conaill, 2012) who too reported that that nude

images induced a greater blink than did clothed images. As it was nude images that caused the heighted attentional blink over nude photos (of people) it may suggest that images have the ability to detect sexual preference over real photos particularly amongst a prison sample. This may override the difficulties of including real images of children in the measure if this measure were to be adapted and used with child sexual offenders. This finding is also supported by Grace (2005 as cited by Flack, 2011) who documented how nude images produced a greater attentional blink effect with nude females in male participants. Interestingly it was found that for the female sample nude young females caused a greater blink than did clothed. This finding may fit with some findings on the viewing time measure where authors suggest men's sexual interest is more strongly category specific than is the sexual interest of women (Israel & Strasberg, 2009) or as is suggested by Jones (2012) when simultaneously presented with male and female erotic stimuli, heterosexual women focus much more evenly to both male and female erotic stimuli than do heterosexual men, who focus almost exclusively to female stimuli.

In the category of young male nude and clothed photos the only significant finding was for the females where young male clothed photos caused a greater blink than did young male nude photos.

Amongst the category of Old female: Nude / clothed photos and old female nude and clothed images there was only one significant finding across the male and female participants. For the male participants they showed a heighted blink for nude old female photos over female old clothed photos. Finally, in the category of old male nude and clothed photos and old male nude and clothed images, the only significant finding was for the females. Nude old male photos caused a greater blink than did male old

clothed photos.

It was also found that young female clothed photos caused a greater blink than did young female clothed images .Old female nude photos caused a greater blink than did old female nude images. This may suggest that for female stimulus items, that photos of real people will work better than images of females. Overall, the above would suggest that the RSVP measure may not be robust enough to determine exact sexual preference amongst the males and the females in the sample. (When one considers for example the finding mentioned above: For females: young male clothed photos caused a greater blink than did young male nude photos, and in the category of older males, nude old males caused a greater AB for females than did clothed old males).

One possible explanation has been offered by (Flack, 2011). Flack questions the lack of the strength of erotic type images. If this caused a problem in the context of rapid serial visual presentation, it is of interest and warrants further investigation. As outlined earlier with other measures such as the viewing time assessment, the lack of inclusion of more sexually explicit images may be hindering the detection of sexual interest across both low risk and high risk populations.

As was mentioned in the results section because females only participated in the low risk group, the gender of the participant and the group was combined now allowing for differences to be explored amongst female low risk, male low risk and nonsexual offending male samples. In the low risk male sample nude females caused a greater blink than did clothed females. Of the low risk females nude females caused a greater blink than did clothed females. Of the nonsexual offender group nude females caused a greater blink than did clothed females (these differences were significant). Nude males

caused a greater blink than did clothed males in the low risk males. Amongst the female low risk sample nude males caused a greater blink than did clothed males. These significant results are certainly indicative of the fact that nude over clothed stimuli in the Rapid Serial Visual Presentation paradigm are showing more promise when used amongst both a low risk and offender population. Again the finding here are supported by Mac Conaill (2012) who also found that found that nude images induced a greater blink than did clothed images. Thus indicates that

> "the sexual provocation of the image is a big factor in assessing sexual interest and that using real clothed images of children in paedophile assessment may not be useful, which further underlines the importance of developing computer generated images for this purpose". (Mac Conaill, 2012, p.8).

Other significant findings were as follows. The male non sexual offender had a heightened blink for young females over old females. Young female nude images caused a significantly greater blink than did nude photos. Young female clothed photos caused a greater blink than did young female clothed images. Old female nude photos caused a greater blink than did old female nude images.

5.8 Conclusions

Overall, the findings show that nude over clothed stimuli in the Rapid Serial Visual Presentation paradigm are showing more promise when used amongst both a low risk and offender population. If this study were to be replicated it would be recommended that the images be updated.

Although the study overall had the potential to illustrate that nude over clothed

stimuli induced a heightened blink in both low risk and an offender sample, more erotic stimuli could have been included and may have helped to define specific sexual preferences. Researchers have questioned the lack of the strength of erotic type images. This may cause a problem in the context of rapid serial visual presentation, if so it warrants further analysis.

Chapter 6: The Utility of Implicit Measures in a Forensic Context? Summary of the Findings and Conclusions

6.1 Introduction

This chapter shall provide a summary of the overall findings and highlight the unique contributions made in this piece of research. It will demonstrate in particular how the research has extended the current literature and illustrates how in some instances the findings were non- supportive of current literature. The aim of this research was to investigate the utility of a number of implicit association measures amongst low risk, child sexual offender, rapists and nonsexual offender samples. The measures implicit measures included in this study were the viewing time measure, the implicit association test and the rapid serial visual presentation measure. These measures were utilised as the current literature pertaining to the assessment of sexual offenders recognises that these paradigms may have the ability to tap into underlying cognitions and associations that offenders are proposed to have that may ultimately be missed when relying upon more explicit type measures such as self reports. As many of these measures are still in their infancy particularly when utilised amongst deviant populations it was decided to also include the structured clinical interview for disorders (An explicit self report measure) to determine if group differences emerged on the subscales on this test. The utility of this measure amongst clinical and non clinical samples is well documented in the literature with its high reliability too been acknowledged. What follows is a summary of the contributions of these measures, overall findings and recommendations for future studies

The successful identification, assessment and management of those with deviant

sexual and/or violent interests are fundamentals in ensuring public protection. As sexual offenders often exhibit deviant sexual arousal patterns consistent with their offending, deviant sexual preferences represent a central part of sex offender assessment. In addition to highlighting vital insight into the dynamics of offender motivation and behaviour, measures of deviant sexual arousal have been shown to have strong associations with sexual and violent recidivism, predominantly for men who sexually abuse children. As a means to assess the deviant sexual interests of sexual and violent offenders, researchers have engaged in a number of standardized methods based on the stages of arousal. Following this, physiological methods of exploring sexual preference have dominated the assessment of sexual offenders for some time. Identifying a sexual offender's sexual interest is important in clinical forensic settings not only to predict the possible rate of recidivism but also to improve decisions regarding sentencing, institutional placement, recommendations with regard to parole and the restrictiveness of conditions attached to supervision in the community. Establishing sexual interest is also important in terms of determining treatment needs. By their nature of being a manipulative and deceiving population, forensic populations, are extremely non-compliant. Forensic assessment of deviant sexual preferences can be largely divided into physiological, self-report and attentional procedures. Physiological assessment of sexual interest is characterised by penile plethysmography (PPG) which has become one of the most widely used techniques in sex offender assessment research.

Although some studies have documented high internal consistency and classification accuracy for Plethysmography, there remains a large proportion of wrongly classified participants. Apart from lack of standardization, penile

plethysmography has other inherent problems including the requirement of expensive and invasive equipment and the requirement of a compliant and physiologically responsive subject. It also has other problems like low reliability, fake ability, is costly and has ethical implications. In the main, forensic sex offender assessments are geared towards risk appraisal or readiness for treatment. To this end sex offender treatment programmes have relied heavily upon self report as they are inexpensive and easy to use. While self report techniques are deemed useful for targeting the cognitions and beliefs that support abusive behaviour deviant sexual interests are less accessible by such techniques. Due to the effects of deception, defensiveness, social desirable responding and impression management, self report techniques are limited in their usefulness with forensic populations Researchers in the field stress how individuals interviewed in forensic setting seldom attend readily for an assessment and therefore are defensive and minimising in their level of sexual offending behaviours.

In an effort to overcome some of the difficulties and limitations involved in physiological and self report measures with Forensic populations, researchers have focused on implicit measures of sexual preference. The reason being is that they may make it difficult to influence response through conscious control. It also allows for accessing attitudes and associations not accessible through self report. This is due to the offender's lack of awareness of such attitudes .Methods such as rapid serial visual presentation, relational frame theory and the implicit association test may therefore be a way forward in terms of providing a robust, less-faxable measure of sexual interest while simultaneously avoiding the issue of volunteer bias by including more representative normative samples. In an effort to overcome some of the difficulties and

limitations involved in physiological and self report measures, researchers have turned their focus to more implicit measures of sexual preference and interest. Implicit measurement is an umbrella term applied to various measurement methods that make it difficult to influence responses through conscious control. They provide the opportunity to assess associations, attitudes and compulsions which may not be accessible through self report due to the offenders' lack of awareness of such attitudes/beliefs. The current literature also highlights the need for implicit cognitive studies and suggest that they should be carried out to understand if child molesters hold offence supportive cognitions that support the committing of sexual offences. The central research question here was concerned with the viability of latency based implicit measures in forensic assessment. Findings from each of the measures and conclusions drawn are outlined below.

6.2 Viewing Time

The rationale underlying the viewing time test is that people will look longer at pictures they find sexually attractive. In this case it was expected that child sexual offenders would look longer at images of children and that they would take longer to respond to images of children because these images may be particularly salient to them. Overall, some interesting finding came to light when exploring the viewing time paradigm as a measure of sexual interest both amongst a high risk and low risk population.. In the context of the response time to images the following was found. In each of the five categories of images it was found that males viewed females for significantly longer than they did males with the exception of old females. Males viewed female children, female pubescent images, female young adults and female adults for significantly longer than males. These findings extend those proposed by (Quinsey,

Ketzetis, Earls, & Karamanoukian 1996) in relation to males. They hypothesize that males should look longer at pubescent female images. The findings here too support Evolutionary Theory of Mate Preferences (Symons 1979), males view pictures and images of young adults of the opposite sex longest.. For the females in the sample some of the findings in the response time to images and the time taken to view imagesis also supportive of current literature. Females took significantly longer to respond to images of young adult males and adult males than they did females. This finding was expected and is too extending the Evolutionary Theory of Mate Preferences (Symons, 1979), males and females view pictures and images of young adults of the opposite sex longest. It was found that females also viewed older females for significantly longer than they did older males. This finding is supportive of a a study proposed by Israel and Strasberg (2009). These researchers assessed viewing as a measure of sexual interest in self identified heterosexual men and women. Participants rated sexual appeal of sexually provocative photos, within viewing time being unobtrusively measured. They also found that females viewed same sex pictures significantly longer than did men. Most of the significant differences found in relation to response time to the image blocks are documented for the males. This finding may also extend the findings of the aforementioned author who suggest that when viewing time was used they found that men's sexual interest is more strongly category specific than is the sexual interest of women. This point was also noted by Jones (2012) who suggests that women have a much less category-specific pattern of visual attention to erotic stimuli than do men. When simultaneously presented with male and female erotic stimuli, heterosexual women focus much more evenly to both male and female erotic stimuli than do

heterosexual men, who focus almost exclusively to female stimuli.

Child sexual offenders took longer to view images of children than did the low risk population. This finding is consistent with documented findings on the viewing time paradigm. Viewing time has been described as a valuable method to unobtrusively measure male sexual interest (Harris, Rice, Quinsey, & Chaplin, 1996). This point is also supported by the work of Abel et al., (2004) who noted that the amount of time male child molesters view slides of children was significantly longer than other groups. Harris et al. (1996) also found significant between-group discrimination in that the proportion of overall viewing time to child images greater for child molesters than non offending groups. A study by Giotakos (2006) found that in their viewing time measure child molesters also took significantly longer than other groups to view images of female children. However, this group of offenders took longer also to view images of young adults and older adults. It is proposed that the image sets used may not have been erotic enough in content to detect variability between groups. This may highlight the lack of robustness of this particular measure to pick up on specific sexual preference. This point is too consistent with documented literature on the measure. Harris et al. (1996) suggest that the viewing time procedure may include fully clothed, partially clothed or nude images and the images may include a person who may erotically pose. In this viewing time study all images were fully clothed. This may help to understand the non expected group differences. For example, Harris et al. (1996) propose the notion that sexually non explicit materials may be less effective at predicting sexual preference as it elicits limited variability between the groups. Other researchers also support this finding. For example, Ware, Brown, Amorsa, Pilkey and Presusse (1972) suggest that

as content becomes more explicit viewing time increases. Research to date has also noted that people with different degrees of sex guilt displayed different patterns of Viewing Time as the explicitness of the images increased (Love, Sloan, & Schmidt, 1976). This would suggest that the use of nude images in the viewing time measure or indeed images of a more explicit nature could have proved more effective in pinpointing specific sexual interests. Rice and Chaplin (1994) demonstrated that discrimination between sex offenders and non sex offenders is enhanced by the use of brutal and coercive stimuli, specifically when dealing with rapists or sexual sadists. The use of such images in discerning individuals with paedophilic, violent, or other deviant sexual interests raises ethical as well as legal concerns.

Some of the findings on the viewing time measure were not supported by the literature. Males viewed images of pubescent males for significantly longer than they did pubescent females. This finding conflicts what is proposed by the Evolutionary Theory of Mate Preference (Symons, 1979), which states that males should look at images of pubescent females longer. Also a finding that conflicted with evolutionary theory was that males viewed adult males for longer than adult females. (In this study the rapists viewed young adult males for longer than females and the child sexual offender viewed adult males for longer than they did adult females) This finding again conflicts with the theory because it proposes that males and females should view pictures and images of the opposite sex the longest. The child molesters viewed images of pubescent males for significantly longer than they did pubescent females, and the male nonsexual offenders viewed adult males for longer than they did adult females, also the opposite of what this theory proposes. However some of the findings extend the

theory of evolutionary mate preference as mentioned above, that was male nonsexual offenders viewed images of pubescent females for significantly longer than they viewed pubescent males. It was found that the male nonsexual offenders viewed young adult females for significantly longer than they did young adult males. The male child sexual offenders viewed young adult females for significantly longer than they did young adult males.

The only significant difference found amongst the low risk females was that they viewed images of pubescent females for significantly longer than pubescent males. This finding is the opposite of that proposed by Symons (1979) who suggests that people will look at opposite sex pubescent individuals for longer. In the context of viewing time it would appear again similar to response time to images that with the males more significant differences emerged across the categories of images presented than did females. Three points need to be highlighted here. Firstly, the utility of the viewing time measure is determining sexual preference is questionable. However, the findings may illustrate that men's sexual interest is more strongly category specific than is the sexual interest of women (Israel & Strasberg, 2009). Finally, if the content of the images were to be made more explicit, the viewing time measure may be more effective in pinpointing specific sexual interests.

Correlations were found between the attractiveness rating given to the images and the amount of time spent viewing the images**.** This finding is consistent with documented literature on the VT measure. The literature in this domain suggests that there should be a correlation between viewing time and sexual attractiveness and ratings. (Quinsey, Ketzetis, Earls, & Karamoukian, 1996). It was noted that amongst the

male child sexual offenders viewing time correlated with ratings of sexual attractiveness for images of male children This result extends a finding by Schmidt, Banse and Clarbour (2008) who suggest that viewing time is a good indirect measure of exploring a child molester's sexual interest. Viewing time correlated with ratings of sexual attractiveness given to adult female images by the rapist sample. Though the rapist sample was small, this finding was of particular interest. Giotakos (2006) too found that the rapists versus the control males in their study viewed significantly longer the photos of women, perhaps in this case explaining the correlation between attractiveness rating and time spent viewing adult females amongst the rapist sample.

Amongst the female participants viewing time correlated with ratings of sexual attractiveness for images of male and female children. Viewing time also correlated with ratings of sexual attractiveness for images of pubescent females amongst the female participants. These results were not anticipated, particularly if VT purports to capture sexual preference and interest.

Viewing time correlated with ratings of sexual attractiveness on the image block of young adult males and old male images amongst this group. These results were expected. VT also correlated with ratings of sexual attractiveness on the image block of young adult females amongst female participants.

Israel and Strasberg (2009) too found that females viewed same sex pictures significantly longer than did men. They concluded that men's sexual interest is more strongly category specific than is the sexual interest of women (Israel & Strasberg, 2009). In other words, the females may rate these female images as attractive and spend longer viewing them for reasons outside of having a particular sexual interest in these

images.

Viewing time correlated with ratings of sexual attractiveness for images of pubescent males, young adult males, adult males and old adult females amongst the male low risk group. Again here, similar to the findings for the female sample theses results were not anticipated. As is illustrated above, in some instances the findings from the viewing time measure were supported by the existing literature in the area. However, some of the findings conflicted with published findings. An explanation for some of these unusual findings and recommendations are as follows. It may be that the images need to be more erotic in content and the measure may need to include nude over clothed images in order to capture variability and sexual preference amongst the groups.

6.3 Implicit Association Test

The Implicit association test was chosen as the literature highlights how it is a measurement technique that can make it difficult to influence responses through self control. Implicit techniques give the opportunity to assess associations, attitudes and compulsions through conscious control. The implicit association test is based on a very simple idea that people will perform better on tasks and also perform on greater speed and accuracy when they depend on well-practiced cognitive associations that they have when compared to tasks that are not congruent with automatic mental links or associations that they may hold. It was expected that child sexual offenders and the possibly the rapist sample would produce shorter mean latencies that the control group in the block in which sex-related words shared the same response key with child related. It was expected that the low risk participants would produce shorter mean latencies than the child sexual offenders in the block in which sex-related words shared the same

response key with adult related words. Positive IAT effects would indicate responding in accordance with pre-experimentally defined biases (i.e., within the current study, adults as sexual and children as non-sexual) and negative scores indicate the opposite (i.e., adults as non-sexual and children as sexual).Some interesting findings emerged across the low risk, child sexual offenders and rapists groups. The low risk group were significantly faster on completion of the congruent task than were the child sexual offenders and the rapists. This result was expected though the sample size was small. The low risk group of participants were faster to complete the block where the sexual words were paired with adult as opposed to children's words. Though this implicit association test was designed for child sexual offenders a number of rapists also participated in this test. Interestingly the following findings emerged in relation to this group. The rapists took longer also to complete the congruent task than did the low risk sample. There are a number of possible explanations for this finding. The literature indicates that there are a number of offence supportive cognitions that sexual offenders may have. It has too been suggested that similar to child sexual offenders that there are offence supportive cognitions that rapists have. Though the sample size in this study was small, the following was found. Both the child sexual offenders and the rapists took longer to complete the congruent task, did the low risk sample. This finding is consistent with the literature that is suggesting that sexual offenders and rapists may hold similar Offence supportive cognitions. The findings here are supported by the following research findings. In the context of child sexual offenders Ward and Keenan (1999) propose implicit cognitions such as entitlement and dangerous world (the world is a dangerous place and one should fight back or else seek out non-threatening sexual

partners such as children) and also that sexual behaviour is uncontrollable. That is to say if a person engages in sexually abusive behaviour they are not to blame. On a similar note, Polaschek and Ward (2000) hypothesized that similar to child sexual offenders that there are offence supportive cognitions that rapists have. These implicit theories are women are unknowable, women as sex objects, male sex drive is uncontrollable, entitlement and dangerous world. Gannon, Keown and Rose (2009) too note that implicit theories are held by violent offenders. Though the sample size in this study was small, the following was found. Both the child sexual offenders and the rapists took longer to complete the congruent task, did the low risk sample. This finding is in agreement with ideas as outlined in the literature, suggesting that child sexual offenders and rapists may hold similar offence supportive cognitions. Several studies suggest that many offenders commit crimes of child molestation and rape ((Heil, Ahimeyer, Simons, & English 2003; O' Connell, 1998; Weinrott & Sailer, 1991). As mentioned earlier, these crossover rates would seem to suggest that categorizing these deviant groups into "only" child abusers or "only" rapists is certainly not recommended when considering interventions with these offenders.

Unexpectedly, the low risk group was significantly faster to complete the incongruent task than were the child sexual offenders. On comparisons between the groups, this was the only significant finding on the incongruent task. These findings were not anticipated and are not supportive of the current literature. In line with documented research it was expected that child sexual offenders and possibly the rapist sample would show faster mean responses than low risk populations when presented with the incongruent task. For example, Gray, Brown, MacCulloch, Smith, and

Snowden (2005) found that child sex offenders produced significantly shorter mean response latencies than the control group during the trials in which sex-related words shared the same response key with child-related words. Similarly Nunes et al. (2007) found that was expected that for individuals who were mostly sexually attracted to children, response speed should be quicker when "sexy" and "child" share the same response key than when "sexy" and "adult" share the same response key. Explanations offered for this finding are supportive of those in the literature. There are a number of possible explanations again for these findings. For example, Roche, O' Riordan, Ruiz, and Hand (2005) noted that the IAT is impacted by the stimulus words chosen. Therefore, a participant's level of education and understanding may affect results, as it does in self report measures. This point may prove problematic amongst forensic populations as not all stimuli sets possess the same ability to detect deviant preferences (Gaither & Plaud, 1997; Lalumiere & Quinsey, 1993). Too very often sexual offenders are aware of societies views they may elicit an 'automatic' response consistent with the view perpetuated by society rather than their own. Therefore the IAT, based on the assumption that sexual offenders have implicit attitudes that are consistent with their sexual offences, does not address people who do not display such distorted thinking. For this reason a child molester who does not think it appropriate to engage in sexual behaviour with children will not in theory be identified by the IAT (Fazio & Olson, 2003). McFarland and Crouch (2002) make the following point in relation to cognitive abilities suggesting that IAT effects are determined in some way by the cognitive abilities of the participant (for example the overall speed or response is determined by a person's cognitive abilities). Hummert, Garstka, O'Brien,Greenwald, and Mellott

(2002) highlight how our cognitive abilities decline with age and this may be indicative of the fact that IAT effects are determined by our cognitive abilities. However, the IAT did show some group differences as described on the congruent task above. Mihailides, Devilly and Ward (2004) and Gray et al. (2005) also found group differences between sexual offenders against children and non-offenders using versions of the IAT.

Literature in the area of sex offender research highlights the deviant nature of such groups. It may be possible that the implicit association test may be impacted upon by the stimulus word chosen. (It was noted on this test that a number of sexual offenders asked for the sexual words that were presented to be interpreted for them). It is possible that a pictorial IAT could also be developed in the future for use with sexual offenders. Other points here too need to be considered. It is possible that the sexual offenders may not have been faster than the low risk group on the incongruent task for the following reasons. It is possible that they were aware of the task being completed. Again, it is well noted that sexual offenders are aware of society's views of them and they may elicit an automatic response consistent with views that are perpetuated by society rather than their own. Another consideration here is that for a child molester who does not think it inappropriate to engage in sexual behaviour with children may not be identified by the implicit association test. As mentioned above positive IAT effects would indicate responding in accordance with pre-experimentally defined biases (i.e., within the current study, adults as sexual and children as non-sexual) and negative scores indicate the opposite (i.e., adults as non-sexual and children as sexual). It was therefore expected that child sexual offenders and possibly the rapist would produce more negative scores indicating that children were associated with sex related words

over adults. The reverse was expected to be found for the low risk population .i.e. more positive effects indicating that sex related words were associated with adults over children.

Overall, the IAT showed that there was 33% accuracy with the child sexual offenders, 45% accuracy with the rapists and 56% success rate with the low risk sample although at the expense of inaccurately identifying some of the control group as having sexual offender profiles and some of the sexual offenders as having low risk profiles. This finding was also concurrent with similar studies using the IAT designed for exploration amongst a sexual offender population. Though the sample size was small the findings here are very similar to a study by (Gray et al., 2005). In their study they found from the sample of child sexual offenders= 33%, 45% accuracy with the rapists and 56% success rate with the low risk sample, correctly identifying 78% of the sexual offenders against children, although at the expense of inaccurately identifying 42% of the control participants as sexual offenders.

The following conclusions can be drawn from this study. As with the viewing time measure, the implicit association test certainly shows promise but not the ability to be used in isolation as a measure of sexual interest amongst a high risk and low risk sample. It may be possible that the sex offenders did not perform on the incongruent task as was expected for a number of reasons. The ability to fake on the test or indeed answer in accordance to what they deemed was expected of them by the researcher. It is possible also that a pictorial IAT may have shown greater discrimination in this case. One also needs to consider that cognitive abilities may alter the answers provided on the measure. If this study were replicated it is recommended that a larger sample of sexual

offenders participate. Though as ever the difficulties in accessing this population is acknowledged. As mentioned earlier, this measure is relatively new in this particular context and has specifically shown its utility in the area of social psychology in detecting attitudes and prejudices. It is too recommended that this test is tailored for use with rapists.

6.4 Rapid Serial Visual Presentation

The overall aim of this study was to investigate the utility of a RSVP assessment in determining sexual preference among a low risk population and general offending population The study explored the use of clothed and nude images and clothed and nude photos in sexual preference assessment by examining the relative effects of both nude and clothed images and nude and clothed photos in eliciting an attentional blink. Results were indicative of the fact that mostly nude over clothed stimuli in the Rapid Serial Visual Presentation paradigm are showing more promise when used amongst both a low risk and offender population. This finding extends the findings of (Mac Conaill, 2012) who too reported that nude images induced a greater blink than did clothed images. This finding is also supported by Grace (2005 as cited by Flack, 2011) who documented how nude images produced a greater attentional blink effect with nude females in male participants Interestingly it was found that for the female sample nude young females caused a greater blink than did clothed. This finding is consistent with other studies on the viewing time measure where authors suggest men's sexual interest is more strongly category specific than is the sexual interest of women (Israel & Strasberg, 2009) or as is suggested by Jones (2012) when simultaneously presented with male and female erotic stimuli, heterosexual women focus much more evenly to both

male and female erotic stimuli than do heterosexual men, who focus almost exclusively to female stimuli. The study also illustrated that in some cases images induced a greater blink (that is, images over real photos of people). If this study were to be replicated it is recommended that a number of child sexual offenders participate and that the RSVP measure be adapted for this purpose. The development of computer generated images is necessary in order to explore this area. Also a number of participants suggested that the images and photos presented to them need to be updated. As with the viewing time measure perhaps the use of more erotic images and photos on the rapid serial visual presentation task could be considered. Some of the overall findings amongst participants on the RSVP paradigm were as expected. For example In the category of young male nude and clothed photos the only significant finding was for the females where young male clothed photos caused a greater blink than did young male nude photos. For the male participants they showed a heighted blink for nude old female photos over female old clothed photos. In these examples, perhaps one would expect the opposite of these findings. One possible explanation has been offered by (Flack, 2011). Flack questions the lack of the strength of erotic type images. If this caused a problem in the context of rapid serial visual presentation, it is of interest and warrants further investigation.

6.5 The Structured Clinical Interview for Disorders

The SCID (self –report) measure was included as the utility of this measure amongst clinical and nonclinical samples is acknowledged in the literature. Though there were some significant differences found between the groups on the subscales of the test one would be hesitant to generalize from the results to the population as a whole for each group. It is not necessarily possible to discount the idea that the samples may

not be representative of the populations they were attempting to replicate because of the small sample size.

Results showed significant differences between the groups on the subscales for Borderline, Antisocial, Depressive and Paranoid personality. On each of these subscales of the measure, the offending populations recorded higher mean ranks than did the low risk samples. These findings extend the literature on studies pertaining to personality disorders and forensic populations. Kashani et al. (1980) suggest that separation from families, the stress of being detained and the inability to act out while in confinement are possible reasons for depression amongst incarcerated individuals. Ng et al. (2009) note how offenders in juvenile prison environments were found to receive more counseling and rated staff in the prisons as higher. The point being highlighted here was that inferior services and poor environmental conditions for prisoners may trigger or worsen depression in offenders. Kennedy (2006) in an Irish study conducted in the central mental hospital documented that 54% of newly committed prisoners had a psychotic illness with a previous history of psychotic illness. Research is indicative of the point that it is common for people who are diagnosed as having pedophilia to also experience another major psychiatric disorder anxiety disorder in and/or a personality disorder at some time in their life (Ryan, Richard, & Hall, 2009). Raymond, Coleman, Ohlerking and Christenson (1999) who administered the SCID interview to convicted pedophiles noted that personality disorders such as paranoid personality disorders were common in these participants. Black et al (2007) who using the Structured Clinical Interview found Borderline Personality Disorder amongst 30% of their sample of 65 inmates (convicted for general offences). Faze and Danish (2002) reported that from 62 surveys carried out

across 12 countries and inclusive of over 23,000 inmates, they found 47% of the sample presented with Antisocial Personality Disorder. They too suggest from their study that inmates are about 10 times more likely to have Antisocial Personality Disorders than are the general population. Other researchers too report that the prevalence of APD in Prisons (Hart & Hart, 1989; Singleton, 1998). Blackburn and Coid (1999) reported than in a study conducted in the United Kingdom, they found that 62% of 164 inmates who were violent males met the criteria for Antisocial Personality Disorder. Singleton, Meltzer, and Gatward (1979) found that 56% of 2371 inmates met the criteria for APD.

Studies suggest that the link between personality disorder and offending has important implications for treatment and risk management.The literature is also suggesting that not only it is important to understand personality disorders in forensic populations in the context of treatment and risk but also in understanding what specific personality disorders are linked to offending behaviours. There is now much evidence that personality disorder is related to offending. Studies as outlined above too indicate how some personality disorders other than antisocial are related to particular types of offending behaviour. Within a forensic context, although rates of personality disorder are high in all serious offenders, the role played by personality disorder may be greater in some offences than others. Those with personality disorder may be at higher risk of suicide. Management and treatment issues may be problematic in offenders with personality disorders and finally there may be a link between personality disorders in some categories of offenders and rates of recidivism.

6.6 Limitations and suggestions for the development of implicit measures.

Originally, it was envisaged that a larger number of participant's particularly

sexual offenders would have participated. It was also hoped that each participant in these studies would have completed all measures on the assessment battery so that further investigations across and between the measures could have been explored. This was problematic particularly within the prison setting as time allocated for prisoners who participated was extremely limited, most often only allowing one test to be completed in the given time slot. The SCID proved to be problematic again amongst the prison population as there were 109 items on the test, to be completed in a short time frame. (There are too literacy difficulties that need to be considered within this population). Though the implicit measure show promise within a forensic context their utility still warrants further exploration amongst offending populations. This process may be complemented through use of more erotic stimulus items on both the viewing time and rapid serial visual presentation measures and possibly through a pictorial version of the implicit association test. These points ultimately need consideration and provide the basis for additional development of implicit measurement techniques utilised amongst forensic populations.

6.6 Contributions

As was noted above all of the measures included in this test battery are illustrating that they indeed have utility and have extended upon the current literature on these assessment techniques. These contributions are unique as these implicit measures are very new to the domain of Forensic assessment and are still in their infancy. The designed test battery has only been tested twice amongst an Irish Prison sample. While acknowledging that these implicit measures are still in the experimental stages, their

testing has undoubtedly shown the promise they offer, particularly when used amongst sexual offenders. Should the above recommendations be considered, it is possible that these measures can be adapted for further usage in a clinical environment.

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Appendices

Appendix A: Consent Form and Information for participants

Information provided to participant prior to participating in assessment tasks

As part of the requirements to obtain my PhD from University College Cork, it is necessary for me to carry out the following research study. The study takes approximately 20 minutes to complete and is based on a number of computerized assessment tasks. Each task shall be explained in detail by the researcher prior to participating.

Why have you been asked to take part? You have been asked because you are generally suitable to provide data for this study.

Do you have to take part? Participation is voluntary. If you agree to participate you'll sign a consent form, and you'll get to keep a copy of this information sheet and the consent form. You can withdraw at any time even if you have agreed at first to participate. You may withdraw permission to use your data up to eight weeks after it has been collected by the researcher. If you withdraw permission to use your data, it shall be permanently deleted.

Will your participation in the study be kept confidential? Yes. I will ensure that no clues to your identity appear in the thesis. Any data collected that is referred to in the thesis will be entirely anonymous.

What will happen to the information which you give? The data will be kept confidential for the duration of the study. On completion of the thesis, the data will be

retained for a further six months and then destroyed. It shall be kept confidential from third parties. All data is anonymous. Data and any ids shall be stored in separate places

What will happen to the results? The results will be presented in my thesis. They will be seen by my supervisor, a second marker and the external examiner. The thesis may be read by future students on the course. The study may be published in an academic journal.

What are the possible disadvantages of taking part? I don't envisage any negative consequences for you in taking part.

What if there is a problem? At the end of the assessment, I will discuss with you how you found the experience and how you are feeling. If you subsequently feel stressed, you should contact me the researcher or your GP.

Who has reviewed this study? Approval must be given by Ethics Committee of The Irish Prison Service and the Ethics Board of the School of Applied Psychology University College Cork before studies like this can take place.

If you agree to take part in the study, please sign the consent form overleaf

Consent Form

You are invited to participate in a research study conducted by a researcher from the School of Applied Psychology, University College Cork. The purpose of this study is to examine a number of assessment tasks. Participation in this study will involve completing a number of computerised tasks (4 in total). Each of these will be explained in detail by the researcher in advance. The entire assessment takes approximately 20 minutes to complete. Participation is entirely voluntary. You have the right to refuse to participate, and may withdraw from the study at any time and for whatever reason. In addition, you may choose not to complete any of the individual assessments. All data will be kept strictly confidential. No identifying information will be tied to responses and therefore participants remain anonymous. No reference will be made in oral or written reports that could link you to the study.

By ticking the box below you are stating the following;

I have read this consent form and have been given the opportunity to ask questions. The purpose of the study has been explained to me and I understand it. I am participating voluntarily and I understand that I can withdraw from the study, at any time and for whatever reason. I understand that I am not obliged to complete all the assessment tasks. I understand that my responses are anonymous, all data will be treated confidentially and I permit the use of my data for research purposes.

Appendix B: Log Transformed Results for the Viewing Time Measure

Of interest in the viewing time measure was the time to respond to the image categories, the time to view the images and the attractiveness rating of the images. An ANOVA was carried out to investigate the response times to images. The between subjects effects were the groups (low risk population, child sexual offenders, rapists and nonsexual offenders) and the sex of the participants (males and females). The within subjects effects were the gender of the image (males and females) and the age of the image (children, pubescent, young adults, adults and old adults). (* = significant at the .05 level)

Viewing Time (Response Time)

Table B 1: Main Effects -within subjects (response time to images)

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Image Gender	.404	1	.404	7.281	.008	.058
Image Age	.304	4	.085	4.648	.001*	.038

As can be seen from the table above the main effect of the gender of the image was significant (f=7.281, p=.008) and the main effect of the image age was also significant (f=4.648, p=.001). It showed that when the data was transformed the main effect of the image age was significant.

Table B 2: Two - way Interactions (response time to images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
image age x group	.186	12	.014	.743	.563	.006
image gender x group	.018	3	.006	.109	.955	.003
gender of image x sex	1.301	1	1.301	23.426	.000*	.164
age of the image x sex	.054	4	.014	.743	.563	.006
gender of image x age of image	.070	4	.018	1.127	.343	.009

The two-way interactions showed the following. The image age x group was not significant (f=.743, p=.563). The gender of the image x group was not significant (f=.109, p=.955). The image gender x sex of the participant was significant (f=23.426, p=.000). The two-way interactions between the image age x sex of the participant was not significant (f=.743, p=.563) and the interaction between the image gender x image age was not significant (f=1.127, p=.343)

Table B 3: Three - way interactions (response time to images)

Source	Type 111 Sum of Squares	df	Mean Squared	F	Sig	Partial Eta Squared
gender of image x image age x group	.170	12	.014	.910	.537	.022
gender image x image age x sex	.598	4	.150	9.606	.000*	.075

The following was noted with the three-way interactions. The image gender x image age x group was not significant (f=.910, p=.537). The interaction between the image gender x image age x sex of the participant was significant (f=9.606, p=.000).

Test of between subjects Effects showed the following. The effect of the group was significant (f=4.794, p=.003). The sex of the participant was not significant (f=.028, p=.866).

Table B 4: Tests of between subjects effects

Source	Type 111 Sum of Squares	df	Mean square	F	Sig	Partial Eta Squared
Group	3.988	3	1.329	4.794	.003*	.773
Sex	.008	1	.008	.028	.866	.000

The three-way significant interaction found between the image gender x image age x sex of the participant was examined and showed the following in the context of the time taken to respond to images. Bonferroni post- hoc tests were used. *Please note on the Bonferroni post- hoc tests the mean difference is significant at the 0.5 level.

Males took longer to respond to images of female children (mean=.557) than they did to images of male children (mean=.460) and this difference was significant. Females took longer to respond to images of female children also (mean=.553) than they did to images of male children (mean =.469). This difference was not significant.

Table B 5: (Response time to male and female children)

Source Images of Male and Female children	Mean Difference (1-J)male and female children	Std. Error	Sig	95% Confidence Interval
Male Participants	.097	.026	.000*	.046-.148
Female Participants	.064	.048	.178	-.030-.158

Males took longer to respond to pubescent females (mean=.653) than pubescent males (mean.416) and this difference was significant. Females took longer to respond to pubescent males (mean=.539) than pubescent females (mean=.512) and this difference was not significant. (Though on original results females took longer to pubescent female images, the reverse of what was found here neither of these differences was found to be significant).

Table B 6: (Response time to male and female pubescent images)

Source Images of Male and Female pubescent	Mean Difference (1-J) male and female pubescent images	Std. Error	Sig	95% Confidence Interval
Male Participants	.236	.030	.000*	.176-.296
Female Participants	.026	.056	.640	-.084-.137

Males took longer to respond to young adult females (mean=.666) than they did young adult males (mean=.476) and this difference was significant. Females took significantly longer to respond to young adult males (mean=.636) than they did young adult males (mean=.508).

Table B 7: Mean difference (Response Time to male and female young adults)

Source Images of Male and Female young adults	Mean Difference (1-J) male and female young adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.190	.030	.000*	.131-.250
Female Participants	.128	.055	.023*	-.237-.018

Males took longer to respond to adult females (mean=.616) than they did adult males (mean=.451). This difference was significant. Females took longer to respond to adult males (mean=.576) than did adult females (mean=.511), though this difference was not significant. Males also took significantly longer to respond to old adult females (mean=.523) than they did old adult males (mean=.492). Females took longer to respond to old males (mean=.523) than they did old females (mean=.492). This difference was not significant.

Table B 8: Mean difference (Response Time to male and female adults)

Source Images of Male and Female Adults	Mean Difference (1-J) male and female adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.165	.029	.000*	.108-.222
Female Participants	.065	.053	.225	-.040-.170

Table B 9: Mean difference (Response Time male and female old adults)

Source Images of Male and Female old Adults	Mean Difference (1-J) male and female old adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.066	.030	.031*	.006-.126
Female Participants	.030	.056	.587	-.080-.141

Table B 10: Group difference Response Time to images

Group		Mean Difference	Standard Error	Significant	95% Confidence Interval
Child Sexual Offenders	Low Risk	.20	.052	.002*	.06-.34
Child Sexual Offenders	Non Sexual Offenders	.18	.055	.011*	.03-.32

As is illustrated above, there were some significant difference between the child sexual offenders and the low risk group in the times taken to respond to the images (mean difference=.20, SE =.052, p=.002). There was also a significant difference between the child sexual offenders and the nonsexual offenders (mean difference =.18, S.E=.055, p=.011)

Viewing Time (Move on from Image categories)

An ANOVA was carried out to investigate the viewing time or move on time from the images. The between subjects effects were the groups (low risk population, child sexual offenders, rapists and nonsexual offenders) and the sex of the participants (males and

females). The within subjects effects were the gender of the image (males and females) and the age of the image (children, pubescent, young adults, adults and old adults).

Table B 11: Main effects (Time to move from images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig Value	Partial Eta Squared
Image Gender	.001	1	.001	.041	.841	.000
Image Age	.010	4	.001	.230	.921	.002

As can be seen from the table above the main effect of the image gender was not significant (f=.041, p=.841). The main effect of the image age was not significant (f=.230, p=.921).

Table B 12: Two-way interaction (Time to move from images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig Value	Partial Eta Squared
Image Gender x Group	.041	3	.014	.900	.443	.022
Image Gender x Sex	.029	1	.029	1.959	.164	.016
Image Age x Group	.143	12	.012	1.127	.335	.028
Image Age x Sex	.330	4	.082	7.783	.000*	.061
Image Gender x Image Age	.401	4	.100	6.247	.000*	.050

The two-way interaction between the gender of the image x group was not significant (f=.900, p=.443), the interaction between the image gender x sex of the participant was not significant (f=1.959,p=.164) and the interaction between the image age x group was not significant (f=1.127,p=.335). The interaction between the image age x sex of the

participant (f=7.783,p=.000) and between the age of the image x gender of the image was significant (f=6.247,p=.000).

Table B 13: Three-way interactions (Time to move from images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Square
Image Gender x Image Age x Group	.066	12	.006	.344	.981	.009
Image Gender x Image Age x Sex	.808	4	.202	12.599	.000*	.096

The three way interaction showed that the image gender x image age x group was not significant (f=.344,p=.981). The interaction between the image gender x image age x sex of the participant was however significant (f=12.599,p=.000).

Tests of between subject effects showed that the group was significant (f=6.236,p=.001). The sex of the participant was not significant (f=.006,p=.941).

Table B 14: Between subjects effects Viewing Time

	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Sex of participant	.001	1	.001	.006	.941	.000
Group	4.924	3	1.641	6.236	.001*	.136

The significant three-way interaction between the age of the image x gender of the image x sex of the participant was further explored. Bonferroni post hoc tests showed the following. *Please note on the Bonferroni post- hoc tests the mean difference is significant at the 0.5 level.

Males viewed images of female children for longer (mean=.822) than they did male children (mean=.668). This difference was significant. Females viewed images of female children for longer (mean=.695) than they did male children (mean=.682). This difference was not significant. Males viewed pubescent males for longer (mean=.735) than they did pubescent females (mean=.662). This difference was significant. Females viewed pubescent females (mean=.759) than they did pubescent males (mean=.702). This difference was not significant. Males viewed adult males for longer (mean=.817) than they did adult females (mean=.649). This difference was significant. Females viewed adult males for longer (mean=.718) than adult females (mean=.698). This difference was not significant. Males viewed old females for longer (mean=.701) than they did old males (mean=.679). This difference was not significant. Females viewed old males for longer (mean=.796) than they did old females (mean=.725). This difference was not significant.

Table B 15: Mean difference (Viewing Time male and female children)

Source Images of Male and Female children	Mean Difference (I-J) male and female children	Std. Error	Sig	95% Confidence Interval
Male Participants	.154	.025	.000*	-.204--.105
Female Participants	.013	.046	.780	-.079-.105

Table B 16: Mean difference (Viewing Time pubescent males and females)

Source Images pubescent males and females	Mean Difference (I-J) male and female pubescent images	Std. Error	Sig	95% Confidence Interval
Male Participants	.074	.023	.002*	.028-.119
Female Participants	.057	.043	.118	-.028-.141

Table B 17: Mean differences (Viewing Time young adult males/females)

Source Images of young adult males and females	Mean Difference (I-J) male and female young adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.145	.024	.000*	.098-.192
Female Participants	.032	.004	.466	-.055-.119

Table B 18: Mean difference (Viewing Time adult males/females)

Source Images of Adult males/females	Mean Difference (I-J) male and female adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.169	.024	.000*	.122-.216
Female Participants	.019	.044	.660	-.068-.106

Table B 19: Mean difference (Viewing Time older adult males/females)

Source Images of old males/females	Mean Difference (I-J) male and female older adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.022	.023	.350	-.024--.067
Female Participants	.072	.043	.095	-.013-.156.

Attractiveness Rating of the Images

An ANOVA was carried out to investigate the attractiveness ratings given to the images. The between subjects effects were the groups (low risk population, child sexual offenders, rapists and nonsexual offenders) and the sex of the participants (males and females). The within subjects effects were the gender of the image (males and females) and the age of the image (children, pubescent, young adults, adults and old adults).

Table B 20: Main effects (Attractiveness Ratings)

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
gender of image	.348	1	.348	5.439	.021*	.044
age of the image	1.655	4	.414	40.676	.000*	.255

In the context of attractiveness ratings, the main effect of the image gender (f=5.439, p=.021) and the main effect of the age of the image was significant (f=40.676, p=.000).

Table B 21: Two-way interactions (Attractiveness ratings of images)

Source	Type 111 sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
gender of the image x group	.132	3	.044	.687	.562	.017
gender of image x sex of participant	2.676	1	2.676	41.797	.000*	.260
age of the image x group	.196	12	.016	1.608	.086	.039
age of the image x sex of the participant	.161	4	.040	3.963	.004*	.032
gender of the image x age of the image	.144	4	.036	3.379	.010*	.028

Two-way interactions showed the following the gender of the image and the group interaction was not significant (f=.562, p=.017). The gender of the image and sex of the participant interaction was significant (f=41.797,p=.000). The age of the image and the group interaction was not significant (f=1.608,p=.086). The interaction between the age of the image and the sex of the participant (f=3.963,p=.004) and the interaction between the gender of the image and the age of the image was also significant (f=3.379,p=.010).

Table B 22: Three-way interactions (Attractiveness ratings of images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
gender of the image x age of the image x group	.158	12	.013	1.235	.256	.030
gender of the image x age of the image x sex of the participant	1.140	4	.285	26.734	.000*	.183

The three way interaction between the image gender x image age x group was not significant (f=1.235, p=.256) and the interaction between the image age x image gender x sex of the participant was significant (f=26.734, p=.000).

Table B 23: Between subjects effects (Attractiveness rating of images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Sex of participant	.008	1	.008	.060	.807	.001
Group	1.211	3	.404	2.904	.038*	.068

The effect of the group was significant (f=2.904, p=.038). The gender of the participant was not (f=.060, p=.807).

The three- way significant interaction between the image age x image gender x sex of the participant was further explored. Bon ferroni post hoc tests revealed the following. *Please note on the Bonferroni post- hoc tests the mean difference is significant at the 0.5 level. Males rated female children as more attractive (mean=.141) than male children (mean=.054) this difference was significant. Females rated female children as more attractive (mean=.124) than male children (mean=.083), though the difference was not significant. Males rated pubescent females (mean=.371) as more attractive than male pubescent images (mean=.071) this difference was significant. Females rated pubescent males (mean=.213) as more attractive than pubescent females (mean=.152) though this difference was not significant. Males rated young adult females as significantly more attractive (mean=.357) than young adult males (mean=.087). Females rated young adult males as significantly more attractive (mean=.345) than young adult females (mean=.165). Males rated adult females as significantly more attractive (mean=.241) than adult males (mean=.069). Females rated adult males as significantly more attractive (mean=.286) than they did adult females (mean=.119). Finally males rated old females (mean=.120) as significantly more attractive than old males (mean=.026). Females rated old females as more attractive (mean=.075) than old males (mean=.047). This difference however was not significant.

Table B 24: Mean differences (Attractiveness ratings male and female children)

Source Attractiveness ratings male and female children	Mean Difference (I-J) male and female children	Std. Error	Sig	95% Confidence Interval
Male Participants	.087	.017	.000*	.053-.121
Female Participants	.041	.032	.198	-.022-.103

Table B 25: Mean differences (Attractiveness ratings pubescent male and female)

Source Attractiveness ratings male and female pubescent	Mean Difference (I-J) pubescent male and females	Std. Error	Sig	95% Confidence Interval
Male Participants	.300	.031	.000*	.238-–.361
Female Participants	.060	.058	.302	-.055-.175

Table B 26: Mean differences (Attractiveness ratings young male and female adults)

Source Attractiveness ratings male and female young adults	Mean Difference (I-J) male and female young adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.270	.037	.000*	.197-.342
Female Participants	.179	.068	.009*	.045-.314

Table B 27: Mean difference (Attractiveness ratings male and female adults)

Source Attractiveness ratings male and female adults	Mean Difference (I-J) male and female adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.172	.027	.000*	.118-.226
Female Participants	.166	.051	.001*	.066-.266

Table B 28: Mean differences (Attractiveness ratings male and female older adults)

Source Attractiveness ratings male and female old adults	Mean Difference (I-J) male and female older adults	Std. Error	Sig	95% Confidence Interval
Male Participants	.094	.021	.000*	.53-.135
Female Participants	.028	.038	.467	-.048-104

Considerations noted

Due to the fact that females only participated in the low risk group and males participated across all other groups, it was decided to merge the groups and the gender of the participants in order to explore the possibility of this affecting the findings .The same analysis outlined above was re run with this new variable (combined sex of the participant and group) in the context of the time to respond to the image categories, the time to view the image categories and the attractiveness rating given to each of the categories of images. This new variable created was called the group and gender of participant combined. As above repeated measures AVOVA was carried out for the time to respond to the images, the time to move from the images and the attractiveness ratings of the images. The between subjects effects were the combined groups (low risk population, child sexual offenders, rapists and nonsexual offenders) and the sex of the participants (males and females). The within subjects effects were the gender of the image (males and females) and the age of the image (children, pubescent, young adults, adults and old adults).

Table B 29: Gender and groups of participants in viewing time measure

Male low risk Group
Females Low Risk Group
Male Child Sexual Offenders
Rapist
Male Non Sexual Offenders

Table B 30: Main effects (Response time to images)

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of the Image	2.784	1	2.784	50.146	.000*	.296
Age of the Image	.871	4	.218	11.897	.000*	.091

The main effect of the gender of the image (f=50.146, p=.000) and the main effect of the age of the image (f=11, 897, p=.000) were both significant.

Table B 31: Two-way interactions (Response time to images)

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of Image x combined group/sex of participant	1.837	4	.459	8.274	.000*	.296
Age of the image x combined group/sex of the participant	.337	16	.021	1.151	.305	.037
Age of the image x gender of image	.320	4	.080	5.138	.000*	.134

The two- way interaction between the image gender x combined group and sex of the participant was significant (f=8.274, p=.000), the interaction between the age of the image x combined group and sex of the participant was not significant (f=1.151, p=.305). The two-way interaction between the age of the image x gender of the image was significant (f=5.138, p=.000) .

Table B32: Three –way interactions (Response time to images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age image x gender of image x combined group/sex of participant	1.147	16	.072	4.605	.000*	.134

The three – way interaction between the image age x image gender x combined sex of the participant and group was significant (f=4.605, p=.000).

Table B 32: Test of between subject effects (Response time to images)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Combined group/sex of participant	4.407	4	1.102	3.973	.005*	.118

There was a significant effect of the combined group and sex of the participant (f=3.973,p=.005).

Using Bonferonni post hoc tests the significant three-way interaction found between the age of the image, the gender of the image and the combined group and sex of the participant in the context of response time to the images was explored further. *Please note on the Bonferroni post- hoc tests the mean difference is significant at the 0.5 level.

Table B 33: Mean difference (Response time male and female children)

Source	Mean Difference (I-J) male/female children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.057	.035	.099	-.011-.126
Low Risk Females	.025	.032	.429	-.038-.088
Male Non Sex Offenders	.098	.032	.002*	.036-.161
Rapist	1.33	.073	.070	-.011-.277
Male Child sexual Offenders	.08	.056	.079	-.012-.208

Males of the low risk group took longer to respond to female child images (mean=.434) than they did male child images (mean=.376), this difference was not significant. Females of the low risk group took longer to respond to female child images (mean=.410) than male child images (mean=.385). This difference was not significant. The male nonsexual offender took significantly longer to respond to female children (mean=.518) than male children (mean=.420). The rapist took longer also to respond to images of female children (mean=.611) than male children, though the difference was not significant. The child sexual offenders also took longer to respond to images of female children (mean=.666) than male children (mean=.586) though the difference found was not significant.

Males of the low risk group took significantly longer to respond to female pubescent images (mean=.568) than they did to male pubescent images (mean=.334), females of the low risk group took longer to respond to male pubescent images (mean=.456) than they did female pubescent images (mean=.428) though this difference was not significant. Males in the nonsexual offender group took significantly longer to respond to female pubescent images (mean=.604) than they did to male pubescent images

(mean=.356). The rapist took significantly longer to respond to female pubescent images (mean=.629) than they did to male pubescent images (mean=.436). The male child sexual offender took significantly longer to respond to female pubescent images (mean=.809) than they did to male pubescent images (mean=.540).

Table B 34: Mean differences (Response time male/female pubescent images)

Source	Mean Difference (I-J) male/female pubescent images	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.234	.041	.000*	.154--.314
Low Risk Females	.029	.037	.445	-.045-.102
Male Non Sex Offenders	.249	.037	.000*	.175-.322
Rapist	.193	.086	.026*	.024-.362
Male Child sexual Offenders	.269	.065	.000*	.140-.399

Males of the low risk group took longer to respond to young adult female images (mean=.606) than they did to young adult male images (mean=.375). This difference was significant. Females of the low risk group took significantly longer to respond to young male adult images (mean=.535) than they did young adult females images (mean=.448). Males in the nonsexual offender group took significantly longer to respond to young female adult images (mean=.621) than they did to young adult males images (mean=.408). The rapists took significantly longer to respond to young female images (mean=.689) than they did to young adult males images (mean=.511) and the male child sexual offender took significantly longer to respond to young adult female images (mean=.750) than they did to young male images (mean=.610).

Males in the low risk group took significantly longer to respond to adult females (mean=.546) than they did adult males (mean=.387). Females in the low risk group took significantly longer to respond to adult males images (mean=.511) than they did adult

female images (mean=.440). Males in the nonsexual offender group took significantly longer to respond to adult female images (mean=.521) than they did to adult male images (mean=.384). The rapist took longer to respond to adult female images (mean=.660) than they did adult male images (mean=.523) this difference was not significant. The child sexual offender took significantly longer to respond to adult female images (mean=.738) than they did adult male images (mean=.511).

Table B 35: Mean differences (Response time male/female young adults)

Source	Mean Difference (I-J) male/female young adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.231	.040	.000*	.151-.311
Low Risk Females	.087	.037	.020*	.014-.160
Male Non Sex Offenders	.213	.037	.000*	.140-.286
Rapist	.178	.085	.038*	.010-.346
Male Child sexual Offenders	.140	.065	.032*	.012-.268

Table B 36: Mean differences (Response time male/female adults)

Source	Mean Difference (I-J) male/female adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.159	.039	.000*	-.235-.083
Low Risk Females	.071	.035	.047*	.001-.141
Male Non Sex Offenders	.137	.035	.000*	-.207--.067
Rapist	.137	.081	.094	-.024--298
Male Child sexual Offenders	.227	.062	.000*	.104-.350

Males of the low risk group took significantly longer to respond to old female images (mean=.446) than they did to old male images (mean=.317). Females in the low risk

group took significantly longer to respond to old female images (mean=.486) than they did to old male images (mean=.375). The nonsex offender took significantly longer to respond to old female images (mean=.424) than they did old male image (mean=.377). The rapist took longer to respond to old female images (mean=.496) than they did old male images (mean=.480). The male child sexual offender also took longer to respond to old female images (mean=.635) than they did old male images (mean=.564). None of these differences were found to be significant.

Table B 37: Mean differences (Response time male/female older adults)

Source	Mean Difference (I-J) male/female older adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.129	.041	.002*	.049-.209
Low Risk Females	.0111	.037	.013*	.020-.167
Male Non Sex Offenders	.047	.037	.211	-.027-.120
Rapist	.016	.085	.855	-.153-.185
Male Child sexual Offenders	.072	.065	.273	-.057-.201

Move from image categories (viewing time)

As above repeated measures AVOVA was carried out for the time to move on from the images. The between subjects effects were the combined groups (low risk population, child sexual offenders, rapists and nonsexual offenders) and the sex of the participants (males and females). The within subjects effects were the gender of the image (males and females) and the age of the image (children, pubescent, young adults, adults and old adults).

Table B 38: Main effects (Viewing Time)

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of the Image	.038	1	.038	2.532	.114	.021
Age of the Image	.110	4	.028	2.598	.036*	.021

The main effect of the gender of the image was not significant (f=2.532,p=.114) and the main effect of the age of the image was significant (f=2.598,p=.036).

Table B 39: Two-way interactions (Viewing Time)

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
gender of image x combined group/sex of participant	.046	4	.012	.767	.549	.025
age of the image x combined group/sex of the participant	.727	16	.045	4.290	.000*	.126
age of the image x gender of image	2.072	4	.518	32.301	.000*	.213

The two-way interaction between the image gender x combined sex of the participant and the group was not significant (f=.767, p=.549). The interaction between the image age x combined sex of the participant and group was significant (f=4.290, p=.000) and the interaction between the image age x image gender was significant (f=4.290, p=.000).

Table B 40: Three-way interactions (Viewing Time)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
age image x gender of image x combined group/sex of participant	1.214	16	.076	4.729	.000*	.137

The three-way interaction between the image age x the image gender x combined group by sex of the participant was also significant (f=4.729, p=.000).

Table B 41: Tests of between subjects effects (Viewing Time)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Combined group/sex of participant	5.298	4	1.325	5.032	.001*	.145

Tests of between subjects showed that the combined group and sex of the participant had a significant effect (f=5.032,p=.001).

The three- way significant interaction between the age of the image x gender of the image x combined sex of the participant and group was further explored. Bonferonni post-hoc tests showed the following. *Please note on the Bonferroni post- hoc tests the mean difference is significant at the 0.5 level.

Males in the low risk group viewed images of female children (mean=.759) than they did images of male children (mean=.573). This difference was significant. Females in the low risk group viewed images of female children (mean=.632) for longer than they

did images of male children (mean=.588), though this difference was not significant. The male nonsex offender viewed image of female children (mean=.752) for significantly longer than they did images of male children (mean=.593). The rapist viewed images of female children for significantly longer (mean=.856) than they did images of male children (mean=.708). The male child sexual offender viewed images of female children for significantly longer (mean=.922) than they did images of male children (mean=.797).

Table B 42: Mean differences (Viewing Time male/female children)

Source	Mean Difference (I-J) male/female children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.186	.034	.000*	.119-.252
Low Risk Females	.044	.031	.155	-.017-.105
Male Non Sex Offenders	.159	.031	.000*	.098-.220
Rapist	.148	.071	.039*	.008-.288
Child sexual offender	.125	.054	.023*	.018-.232

Table B 43: Mean differences (Viewing time male/female pubescent)

Source	Mean Difference (I-J) male/female pubescent	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.054	.031	.087	-.008-.115
Low Risk Females	.076	.028	.008*	.020-.133
Male Non Sex Offenders	.105	.028	.000*	.049-.161
Rapist	.035	.065	.597	-.164-.095
Child Sexual Offenders	.100	.050	.047*	.002-.199

Males in the low risk group viewed images of pubescent males longer (mean=.642) than they did images of pubescent females (mean=.588). This difference was not significant.

Females of the low risk group viewed pubescent female images for significantly longer (mean=.685) than they did images of pubescent males (mean=.608). The male in the nonsexual offender group viewed pubescent male images for significantly longer (mean=.682) than they did pubescent female images (mean=.577). The rapists viewed male pubescent images for longer (mean=.776) than they did pubescent female images (mean=.741) though this difference was not significant.

Table B 44: Mean differences (Viewing Time male/female young adults)

Source	Mean Difference (I-J) male/female young adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.164	.032	.000*	-.227-.101
Low Risk Females	.013	.029	.664	-.45-.071
Male Non Sex Offenders	.137	.029	.000*	.079-.195
Child sexual offender	.163	.051	.002*	-.061-.264
Rapist	.115	.067	.090	-.018-.249

The males in the low risk group viewed young adult female images for significantly longer (mean=.724) than they did young adult male images (mean=.560). Females in the low risk group viewed young adult male images (mean=.642) than they did young adult female images (mean=.629). This difference was not significant. Males in the nonsex offender group viewed young adult female images for significantly longer (mean=.692) than they did young adult male images (mean=.555). The rapist viewed young adult female images for longer (mean=.809) than they did young adult male images (mean=.694). This difference was not significant. The male child sexual offender

viewed young adult female images for significantly longer (mean=.922) than they did young adult male images (mean=.760).

Males in the low risk group viewed adult male images for significantly longer (mean=.726) than they did adult female images (mean=.537). Females of the low risk group viewed adult males images for longer (mean=.626) than they did adult female images (mean=.587) this difference was not significant. Males in the nonsex offender group viewed adult male images for significantly longer (mean=.824) than they did adult female image (mean=.572). The rapist viewed adult male images for significantly longer (mean=.824) than they did adult female images (mean=.687) and the male child sexual offender viewed adult male images for significantly longer (mean=.962) than they did adult female images (mean=.798).

Males of the low risk group viewed old females longer (mean=.634) than they did old males (mean=.578). This difference was not significant. Females of the low risk group viewed old males for longer (mean=.695) than old females (mean=.658). This difference was not significant. Males in the non sex offender group viewed old females for longer (mean=.597) than they did old males (mean=.592) this difference was not significant. The rapist viewed old female images (mean=.728) than they did old male images (mean=.702) and the male child sexual offender viewed old female images for longer (mean=.870) than they did old male images (mean=.818). Neither of these differences was found to be significant.

Table B 45: Mean differences (Viewing Time male/female Adults)

Source	Mean Difference (I-J) male/female adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	1.88	.032	.000*	-.252--.125
Low Risk Females	.039	.029	.188	-.019-.097
Male Non Sex Offenders	.252	.029	.000*	.129-.244
Rapist	.138	.067	.043*	.005-.271
Child Sexual Offender	.163	.051	.002*	.062-.265

Table B 46: Mean differences (Viewing Time male/female older adults)

Source	Mean Difference (I-J) male/female older adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.056	.031	.073	-.005-.118
Low Risk Females	.037	.028	.192	-.019-.094
Male Non Sex Offenders	.004	.028	.879	-.052-.061
Rapist	.026	.065	.695	-.104-.155
Child Sexual Offenders	.052	.050	.301	-.047-.151

Attractiveness ratings and the image categories

Table B 47: Main effects (Attractiveness ratings)

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of the Image	3.395	1	3.395	53.035	.000*	.309
Age of the Image	3.149	4	.787	77.386	.000*	.394

The main effect of the gender of the image (f=53.035, p=.000) and the main effect of the age (f=77.386, p=.000) of the image were both significant.

Table B 48: Two-way interactions (Attractiveness Ratings)

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
Gender of Image x combined group/sex of participant	4.905	4	1.226	19.157	.000*	.392
Age of the image x combined group/sex of the participant	.632	16	.039	3.882	.000*	.115
Age of the image x gender of image	.766	4	.192	17.976	.000*	.131

The two – way interaction between the gender of the image x combined group and sex of the participant was significant (f=19.157, p=.000). The age of the image x combined group and sex of the participant was significant (f=3.882, p=.000) and the interaction between the image age x image gender (f=17.976, p=.000) was also significant.

Table B 49: Three way interactions (Attractiveness Ratings)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age image x gender of image x combined group/sex of participant	2.113	16	.132	12.395	.000*	.294

The three- way interaction between the image age x image gender x combined group and sex of the participant was also significant (f=12.395, p=.000).

Table B 50: Between subjects effects (Attractiveness Ratings)

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Combined group/sex of participant	1.551	4	.388	2.790	.029*	.086

Tests of between subjects effects showed that the combined group x the sex of the participant was significant (f=2.790, p=.029).

The significant three- way interaction between the age of the image x gender of the image and the combined group and sex of the participant was further explored. Bonferonni post-hoc tests showed the following. *Please note on the Bonferroni post-hoc tests the mean difference is significant at the 0.5 level.

Table B 51: Mean differences (Attractiveness Ratings male/female children)

Source	Mean Difference (I-J) male/female children	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.075	.023	.001*	.030-.121
Low Risk Females	.029	.021	.170	..013-.071
Male Non Sex Offenders	.074	.021	.001	.032-.116
Rapist	.072	.048	.139	.024-.168
Child Sexual Offenders	.127	.037	.001*	.053-.200

Males in the low risk group rated female children (mean=.077) as significantly more attractive than male children (mean=.002). Females in the low risk group rated female children as more attractive (mean=.060) than they did male children (mean=.031). This difference was not significant. Males in the non sex offender group rated female

children as significantly more attractive (mean=.185) than they did male children (mean=.053). The rapist rated female children as more attractive (mean =.125) over male children (mean=.053). This difference was not significant. The male child sexual offender rated female children as significantly more attractive (mean=.179) than male children (mean=.053).

Table B 52: Mean differences (Attractiveness ratings male/female pubescent images)

Source	Mean Difference (I-J) pubescent images	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.314	.042	.000*	.230-.397
Low Risk Females	.047	.039	.228	-.030-.123
Male Non Sex Offenders	.339	.039	.000*	.262-.415
Rapist	.238	.089	.008*	.062-.424
Child Sexual Offenders	.310	.068	.000*	.176-.445

Males in the low risk group rated female pubescent images (mean=.331) as significantly more attractive than male pubescent images (mean=.018). Females in the low risk group rated pubescent males as more attractive (mean=.159) than pubescent female images (mean=.112). This difference was not found to be significant. The male in the nonsexual offender groups rated pubescent female images (mean=.454) as significantly more attractive than male pubescent images (mean=.115). The rapists rated female pubescent images as significantly more attractive (mean=.330) than they did male pubescent images (mean=.092). The male child sex offender rated female pubescent images as significantly more attractive (mean=.372) than they did male pubescent images (mean=.061).

Males in the low risk group rated young adult females as significantly more attractive (mean=.312) than young adult males (mean=.074). Females in the low risk group rated young adult males as significantly more attractive (mean=.331) than young adult females (mean=.120). Males in the non sexual offender group rated young adult females (mean=.449) as significantly more attractive than young adult males (mean=.122). The rapist rated young adult females as significantly more attractive (mean=.344) than young adult males (mean=.103). The male child sexual offender rated young adult females as significantly (mean=.322) than young adult males (mean=.050).

Table B 53: Mean differences (Attractiveness ratings male/female young adults)

Source	Mean Difference (I-J) male/female young adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.239	.049	.000*	-336-.141
Low Risk Females	.211	.045	.000*	.121-.300
Male Non Sex Offenders	.327	.045	.000*	.237-.416
Rapist	.241	.104	.022*	.035-.447
Child Sexual Offenders	.272	.079	.011*	.115-.429

The males in the low risk group rated adult females as significantly more attractive (mean=.203.) than adult males (mean=.071). The females in the low risk group rated the adult males (mean=.288) as significantly more attractive than adult females (mean=..082). the males in the non sexual offender group rated adult females as significantly more attractive (mean=..257) than adult males (mean=.104). The rapist rated the adult females as more attractive (mean=.190) than adult males (mean=.070). This difference was not found to be significant. The male child sexual offenders rated

adult females as significantly more attractive (mean=.314) than adult males (mean=.031).

Table B 54: Mean differences (Attractiveness ratings male/female adults)

Source	Mean Difference (I-J) male/female adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.132	.037	.000*	.059-.205
Low Risk Females	.206	.034	.000*	.139-.273
Male Non Sex Offenders	.153	.034	.000*	.086-.220
Rapist	.120	.078	.125	.034-.273
Child Sexual Offenders	.283	.059	.000*	.166-.400

In the final category of the older adult the following differences were found amongst the groups and the male and female participants. The males in the low risk category rated old females (mean=.072) as more attractive than old males (mean=.004). this difference was not significant. The females in the low risk group rated old females as more attractive (mean=.027) than old males (mean=.025). This difference was not significant. Males in the nonsexual offender group rated old females (mean=..138) as significantly more attractive than old males (mean=..70). The rapists rated the old females as more attractive (mean=.093) than old males (mean=.032). This difference was not significant. Finally, the male child sexual offender rated the old female (mean=.177) as significantly more attractive than the old male images (mean=.-4.3).

Table B 55: Mean differences (Attractiveness ratings male/female older adults)

Source	Mean Difference (I-J) male and female older adults	Std. Error	Sig	95% Confidence Interval
Low Risk Males	.068	.028	.016*	-.123-.013
Low Risk Females	.002	.025	.932	-.048-.053
Male Non Sex Offenders	.069	.025	.008*	.018-.119
Rapist	.062	.059	.295	.-.054-.178
Child Sexual Offenders	.177	.045	.000*	.088-.265

Appendix C: List of words on the Implicit Association Test

Child Words	Adult Words	Sexual Words	Non Sexual Words
Playground	Mortgage	Orgasm	Key
Dolls house	Driving	Vagina	Chair
Hopscotch	Authority	Intercourse	Wall
Crayons	Housework	Masturbate	Table
Santa	Career	Condom	Tree
Playschool	Bills	Breast	Door
Cartoons	Marriage	Penis	Window
Skipping	Alcohol	Pornography	Cup
Chasing	Cigarette	Grope	Bowl
Innocence	Debt	Fondle	Fridge

Appendix D: Log Transformed Results Rapid Serial Visual Presentation

A repeated measures ANOVA was carried out. The between subject factors was the sex of the participant and the groups. The within subject factors were the age of the image (young/old), the gender of the image, the status of the image (photo/image) and the dress of the image (clothed/nude). (Please note *= significant at the .05 level)

Table D 1: Main effects RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age of the Image (young/old)	.059	1	.059	4.316	.041*	.054
Gender of Image	.046	1	.046	2.023	.159	.026
Status of Image (Real Photo//image)	.161	1	.161	6.220	.015*	.076
Dress of the Image (clothed/nude)	.610	1	.610	19.350	.000*	.203

The age of the image had a significant main effect (f=4.316, p=.041). The main effect of the gender of the image (f=.159, p=.026) was not significant. The status of the image (f=6.220, p=.015) and the dress of the image (f=19.350, p=.000) both had significant main effects.

Table D 2: Two-way interactions RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age of the Image x Sex of the participant.	.010	1	.010	.727	.397	.009
Age of image x Group	.007	1	.007	.515	.475	.007
Gender of image x Sex of participant	.028	1	.028	1.229	.271	.016
Gender of Image x Group	.041	1	.041	1.769	.187	.023
Status of Image x Sex of participant	.036	1	.036	1.407	.239	.018
Status of Image x Group	8.33	1	8.33	.003	.955	.000
Dress of image x Sex Participant	.021	1	.021	.657	.420	.009
Dress of the image x Group	.051	1	.051	1.616	.208	.021
Age of the Image x Gender of Image	.010	1	.010	.448	.505	.006
Age of Image x Status of Image	.001	1	.001	.037	.847	.000
Gender of Image x status of image	.267	1	.267	8.742	.004*	.103
Gender of image x dress of the image	.050	1	.050	4.576	.036*	.057
Status of the image x dress of the image	.148	1	.148	8.761	.004*	.102

The following two-way interactions were not significant. The image age x sex of participant (f=.727, p=.397). The image age x group (f=.515,p=.475), the image gender x sex of the participant (f=1.229,p=.271), image gender x group (f=1.769,p=.187), image status x sex of the participant(f=1.407,p=.239), the image status x group (f=.003,p=.955), the image dress x sex of the participant (f=.657,p=.420), the image dress x group (f=1.616,p=.208), the image age x image gender (f=.448,p=.505), the image age x status of the image (f=.037,p=.847). The following two-way interactions were found to be significant. They were the image gender x image status (f=.847,

p=.004), the image gender x image dress (f=4.576, p=.036) and the image status x image dress (f=8.761, p=.004).

Table D 3: Three-way interactions RSVP

Source	Type 111 sum of squares	df	Mean Square	F	Sig	Partial Eta Squared
image age x image gender x sex participant	.059	1	.059	2.581	.112	.033
image age x image gender x group	.009	1	.009	.381	.539	.005
image age x image status x sex of participant	.042	1	.042	2.386	.127	.030
image age x image status x group	.025	1	.025	1.425	.236	.018
image gender x image status x sex of the participant	.064	1	.064	2.108	.151	.027
image gender x image status x group	.008	1	.008	.246	.621	.003
image age x image gender x image status	.007	1	.007	.234	.630	.003
image age x image dress x sex of the participant	.057	1	.057	2.809	.098	.036
image age x image dress x group	2.81	1	2.81	.001	.970	.000
image gender x image dress x sex of the participant	.042	1	.042	3.839	.054	.048
image gender x image dress x group	.000	1	.000	.021	.884	.000
image age x image gender x image dress	.304	1	.304	11.957	.001*	.136
image status x image dress x sex of the participant	.001	1	.001	.061	.806	.001
image status x image dress x group	.015	1	.015	.875	.353	.011
image age x image status x image dress	.675	1	.675	29.477	.000*	.279
image gender x image status x image dress	.019	1	.019	.987	.324	.013

Three-way interactions showed the following. There were only two significant three-way interactions. They are as follows. Image age x image gender x image dress (f=11.957, p=.001) and image age x image status x image dress (f=.29.477, p=.000). All other three-way interactions were not significant. Image age x image gender x sex of the participant (f=2.581,p=.112), image age x image gender x group (f=.381,p=.539), image age x image status x sex of the participant (f=.2386,p=.127), image age x image status x group (f=1.425,p=.236), image gender x image status x sex of the participant (f=2.108,p=.151), image gender image status x group (f=.246,p=.621), image age x image gender x image status (f=.234,p=.630), image age x image dress x sex of the participant (f=.098,p=.036), image age x image dress x group (f=.021,p=.884), image status x image dress x sex of the participant (f=.061,p=.806), image status x image dress x group (f=.875,p=.353) and finally the image gender x image status x image dress (f=.987,p=.324).

Table D 4: Four-way interactions RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared.
image age x image gender x image status x sex of the participant	.000	1	.000	.004	.948	.000
image age x image gender x image status x group	.019	1	.019	.698	.406	.009
image age x image gender x image dress x sex of participant	.004	1	.004	.146	.704	.002
image age x image gender x image dress x group	.003	1	.003	.100	.752	.001
image age x image status x image dress x sex of the participant	5.85	1	5.85	.003	.960	.000
image age x image status x image dress x group	.010	1	.010	.416	.521	.005
image gender x image status x image dress x sex of the participant.	.042	1	.042	2.192	.143	.028
image gender x image status x image dress x group	.010	1	.010	.502	.481	.007
image age x image gender x image status x image dress	.163	1	.163	8.312	.005*	.099

Only one of the four-way interactions was found to be significant. That was the interaction between the image age x image status x image gender x image dress (f=8.312, p=.005). All of the other four- way interactions were not found to be significant. They are as follows. The image age x image gender x image status x sex of the participant (f=.004,p=.948), image age x image gender x image status x group (f=.698,p=.406), the image age x image gender x image dress x sex of the participant (f=.146,p=.704), the image age x image gender x image dress x group (f=.100,p=.752), image age x image status x image dress x sex of the participant (f=.003,p=.960), the

image age x image status x image dress x group (f=.416,p=.521), the image gender x image status x image dress x sex of the participant (f=2.192,p=.143) and finally the image gender x image status x image dress x image age (f=8.312,p=.005)

Table D 5: Five - way interactions RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Image age x image gender x image status x image dress x sex of the participant	.101	1	.101	5.158	.026*	.064
Image age x image gender x image status x image dress x group	.019	1	.019	.990	.323	.013

The five –way interactions showed the following. The interaction between image age x image gender image status x image dress x sex of participant was significant (f=5.158, p=.026). Image age x image gender x image status x image dress x group was not significant (f=.990, p=.323).

Table D 6: Between Subjects Effects

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Sex of participant	.194	1	.194	1.028	.314	.013
Groups (low risk/Non Sexual Offenders)	.060	1	.060	.319	.574	.004

Tests of between subjects effects showed that the sex of the participant had no significant effect (f=1.028, p=.314). The group showed no significant effect (f=.319, p=.574).

The significant five way interaction that was found between the image age x image dress x image status x image gender x sex of the participant was examined further. Bonferronni post- hoc tests showed the following. *Please note on the Bonferroni post-hoc tests the mean difference is significant at the 0.5 level.

Amongst the male participants the young female nude photos (mean=.162) caused a greater blink than did young female clothed photos (mean=.189). This difference was not found to be significant. In the females the mean blink was greater for young female nude photos (mean=.218) over young female clothed photos (mean=.223). This difference was not found to be significant. Amongst the male sample it was found that young nude female images caused a significantly greater blink (mean=.070) than did young female clothed images (mean=.362). Amongst the female sample it was found that nude young female images caused a significantly greater blink (mean=.225) than did young female clothed images.

Table D 7: Mean difference (AB Young female photos nude/clothed)

Source Young Female Photos	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	**Nude v Clothed**	-.027	.029	.360	-.085-.031
Females	**Nude v Clothed**	-.004	.048	.932	-.099-.091

Table D 8: Mean difference (AB Young female images nude/clothed)

Source Young Female Images	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	**Nude v Clothed**	-.291	.030	.000*	.232-.351
Females	**Nude v Clothed**	-.1.118	.049	.017	-.215-.021

The next category to show differences was the young male nude photos/young and young male clothed photos. In the males there was no difference in the attention blink caused between young male nude photos (mean=.273) and between young male clothed photos (mean=.273). Amongst the females, male young clothed photos caused a greater blink (mean=.170) than did young male nude photos (mean=.269). This difference was found to be significant.

For the males young nude male images caused a greater blink (mean=.202) than did young male clothed images (mean=.240).This difference was not significant. For the females young male nude images caused a greater blink (mean=.212) than did young male clothed images (mean=.315). Difference was not found to be significant.

Table D 9: Mean Difference (AB) (Young male photos nude and clothed)

Source Young Male Photos	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	**Nude v Clothed**	.000	.025	.993	-.051-.050
Females	**Nude v Clothed**	-.1.00	.041	.018*	-.182-.018

Table D 10: Mean difference (AB young male nude/clothed images)

Source Young Male Images	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	**Nude v Clothed**	-.038	.032	.237	-.026-.102
Females	**Nude v Clothed**	-.103	.052	.053	-208-.001

In the old female photos category, male participants had a greater blink for nude (mean=.136) than for clothed old female photos (mean=.234). This difference was significant. For female participants the nude old female photos caused a greater blink (mean=.246) than did old female clothed photos (mean=.298). This difference was not significant.

In the category of old female images, for the males the greater blink was caused by old female clothed images (mean =.246) over old female nude images (mean=.298). This difference was not significant. Amongst the female participants old female clothed images (mean=.298) caused a greater blink than did old female nude images (mean=.304). This difference was not significant.

Table D 11: Mean difference (AB old female photos nude/clothed)

Source Old female Photos	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	**Nude v Clothed**	.097	.030	.002*	-.158--.037
Females	**Nude v Clothed**	-.066	.049	.183	-.165-.032

Table D 12: Mean difference (AB old female images nude/clothed)

Source Old female Images	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	**Nude v Clothed**	-.052	.031	.102	-.114-.011
Females	**Nude v Clothed**	-.036	.051	.484	-.137-.066

In the category of old female photos, in the male participants nude photos (mean=.230) caused a greater blink than did old female clothed photos (mean=.261). Amongst the female participants, old female nude photos (mean=.234) caused a greater blink than did old female clothed photos (mean=.312). This difference was found to be significant.

In the category of old male images, for the male participants, the nude images caused a greater blink (mean=.188) than did old male clothed images (mean=.243). This difference was not significant. Amongst the females, old nude male images elicited a greater blink (mean=.241) than did old clothed males image (mean=.321). This difference was not found to be significant.

Table D 13: Mean difference (AB old male photos nude/clothed)

Source Old Male Photos	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	**Nude v clothed**	-.031	.024	.198	-.078-.016
Females	**Nude v clothed**	-.78	.039	.047*	-.155-.001

Table D 14: Mean difference (AB old male images nude/clothed)

Source Old Male Images	Image Dress	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	**Nude v Clothed**	-.055	.036	.127	-.127-.016
Females	**Nude v Clothed**	-.080	.059	.175	-.197-.036

Considerations and the above results

The group and the gender of the participants were merged so that the following could be explored. Males in the low risk category, males in the nonsexual offender group and the females in the low risk group. A repeated measures ANOVA was carried out. The between subject factors was the combined sex of the participant and the groups. The within subject factors were the age of the image (young/old), the gender of the image, the status of the image (photo/image) and the dress of the image (clothed/nude).

Table D 15: Groups and gender of participants RSVP

Males Low Risk Group
Females low Risk Group
Males Non Sexual Offender Group

Table D 16: Main effects RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Age of the Image (young/old)	.036	1	.036	2.642	.108	.034
Gender of Image	.157	1	.157	6.820	.011*	.082
Status of Image (Real Photo/image)	.127	1	.127	4.924	.029*	.061
Dress of the Image (clothed/nude)	1.042	1	1.042	33.037	.000*	.303

As can be seen the age of the image was not significant (f=2.642, p=.034). The main effect of the image gender (f=6.820, p=.011), the image status (f=4.924, p=.029) and the image dress (f=33.037, p=.000) were all significant.

Table: D 17 Two- way interactions RSVP

Source	Type 111 Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
age of the image x combined sex of the participant and group	.011	2	.005	.391	.678	.010
gender of image x combined sex of participant and group	.043	2	.022	.946	.393	.024
status of image x combined sex of participant and group	.057	2	.028	1.093	.340	.028
dress of image x combined sex participant and group	.051	2	.025	.808	.449	.021
age of the image x gender of image	.031	1	.031	1.384	.243	.018
age of image x status of image	.034	1	.034	1.917	.170	.025
gender of image x status of image	.515	1	.515	16.857	.000*	.182
age of image x dress of the image	.076	1	.076	3.726	.057	.047
gender of image x dress of image	.109	1	.109	9.933	.002*	.116
status of image x dress of the image	.214	1	.214	12.539	.001*	.142

The following was noted when examining the two-way interactions. The following interactions were not significant. The image age x combined sex of participant and group (f=.391,p=.678), the image gender x combined sex of the participant and group (f=.946,p=.393), the image status x combined sex of the participant and group(f=1.093,p=.340), the image dress x sex of the participant and group (f=.808,p=.449), image age x image gender (f=1.384,p=.243), the image age x image status (f=1.917,p=.170) and the image age x image dress (f=3.726,p=.057). The following two-way interactions were found to be significant. The image gender x image status (f=16.857, p=.000), the image gender x image dress (f=.993, p=.002) and the image status x image dress (f=12.539, p=.001).

Table D 18: Three-way interactions RSVP

Source	Type 111 Sum of Squares	df	Mean Squared	F	Sig	Partial Eta Squared
Image Age x Image Gender x Combined Sex of the Participant and Group	.157	2	.079	3.469	.036*	.084
Image Age x Image Status x Combined Sex of the participant and Group	.044	2	.022	1.235	.297	.031
Image Gender x Image Status x Combined Sex of the participant and Group	.073	2	.037	1.196	.308	.031
Image age x image gender x Image Status	.023	1	.023	.836	.363	.011
Image age x Image dress x combined sex of the participant and Group	.097	1	.048	2.383	.099	.059
Image Gender x Image Dress x Combined sex of the participant and Group	.076	2	.038	3.481	.036*	.084
Image age x Image Gender by Image dress	.432	1	.432	16.980	.000*	.183
Image Status x Image Dress x Combined sex of the participant and group	.034	2	.017	1.010	.369	.026
Image age x Image status x Image Dress	.757	1	.757	33.088	.000*	.303
Image Gender x Image Status x Image Dress	.000	1	.000	.025	.874	.000

Of the three- way interactions, only four were found to be significant. They are as follows. The image age x image gender x combined sex of the participant and group (f=3.469, p=.036), the image age x image gender x image dress (f=16.980, p=.000) and the image age x image status x image dress (f=33.088, p=.000) and the image gender x image dress x combined sex of the participant and the group (f=3.481, p=.036). All other three-way interactions were not significant. Image age x image status x combined sex of the participant and the group (f=1.235,p=.297), image gender image status x combined sex of the participant and group (1.196,p=.308), the image age x image gender x image status (f=.836,p=.363), the image age x image dress x combined sex of the participant and group (f=2.383,p=.009), the image gender x image dress x combined sex of the participant and group(f=3.481,p=.036), the image status x image dress x combined sex of the participant and group (f=1.010,p=.369) and finally the image gender x image status x image dress was not found to be significant (f=.025,p=.874).

Table D 19: Four-way interactions RSVP

Source	Type 111 Sum of Squares	df	Mean Squared	F	Sig	Partial Eta Squared
image age x image status x image dress x combined sex of participant and group	.017	2	.009	.379	.686	.010
image age x image gender x image dress x combined sex of participant and group	.004	2	.002	.078	.925	.002
image gender x image status x image dress x combined sex of participant and group	.043	2	.022	1.136	.316	.029
image age x image gender x image status x image dress	.413	1	.413	21.058	.000*	.217
image age x image gender x image status x combined sex of participant and group	.029	2	.015	.523	.595	.014

One of the four-way interactions was found to be significant. The image age x image gender x image status x image dress (f=21.058, p=.000). All other interactions were not found to be significant. The image age x image status x image dress x combined sex of the participant and the group (f=.379, p=.686), the image age x image gender x image dress x combined sex of the participant and group (f=.078,p=.925), the image gender x image status x image dress x combined sex of the participant and the group (f=1.1136,p=.316) and the image age x image gender x image status x combined sex of the participant and the group (f= .523,p=.595).

Table D20: Five way interactions

Source	Type 111 Sum of squares	df	Mean Square	F	Sig	Partial Eta squared
Image age x image gender x image status x image dress x combined sex of the participant and group	.107	2	.054	2.731	.072	.067

The five-way interaction between the image age x image gender x image status x image dress x combined sex of participant and the group was not significant (f=2.731, p=.072)

Tests of between subjects effects showed that the effect of the combined sex of the participant and group was not significant (f=.518, p=.598)

Table D 21: Between subject effects combined groups and sex of participant

Source	Sum of Squares	df	Mean Square	F	Sig	Partial Eta Squared
Combined sex of the participant and Group	.196	2	.098	.518	.598	.013

Using Bonferroni post-hoc tests the four way- interaction that was found between the image age x image dress x image status x image gender was explored. *Please note on the Bonferroni post- hoc tests the mean difference is significant at the 0.5 level.

Young female nude images caused a greater blink (mean=.180) than did young female nude photos (mean =.199). This difference was not significant. Young female clothed photos caused a greater blink (mean=.110) than did young female clothed images (mean=.356). This difference was significant. Young male nude images caused a greater blink (mean=.244) than did young male nude photos (mean=.268). This difference was not significant. Young male clothed photos (mean=.204) caused a greater blink than did young male clothed images (mean=.263). This difference was significant.

Table D 22: Mean difference (AB Young female nude image/photo)

Source **Young Females**	**Image Category type**	**Mean Difference**	**Sd. Error**	**Sig**	**95% Confidence Interval**
	Nude images and photos	-.019	.023	.411	-.065-.027

Table D 23: Mean difference (AB young female clothed image/photo)

Source **Young Females**	**Image Category type**	**Mean Difference**	**Sd. Error**	**Sig**	**95% Confidence Interval**
	Clothed images and photos	-246	.024	.000*	.199--.293

Table D 24: Mean difference (AB young male nude image/photo)

Source Young Male	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
	Nude images and photos	-.023	.020	.246	-.063

Table D 25: Mean difference (AB young male clothed images/photos)

Source Young Male	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
	Clothed images and photos	-.059	.026	.023*	-110-.008

The following was noted in the category of old female photos. Nude old female photos caused a greater blink (mean=.148) over old female nude images (mean=.235). This difference was significant. Clothed old female photos (mean=.255) caused a greater blink than did old female clothed images (mean=.293). This difference was not significant. Old male nude images (mean=.231) caused a greater blink than did old male nude photos (mean=.279). This difference was significant.. Old male clothed photos caused a greater blink (mean=.197) than did old male clothed images (mean=.274).

Table D 26: Mean difference (AB old female nude/images photos)

Source Old Female	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
	Nude images and photos	-.087	.024	.001*	-.134-.039

Table D27: Mean difference (AB old female clothed images/photos)

Source Old Female	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
	Clothed images and photos	.038	.025	.129	-.087-.011

Table D 28: Mean difference (AB old male nude image/photo)

Source Old male	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
	Nude images and photos	-.047	.019	.014*	-.085-.010

Table D 29: Mean difference (AB old male clothed image/photos)

Source Old Male	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
	Clothed images and photos	-.077	.028	.008*	-.134--.021

The three-way interaction between the image gender x image dress x combined sex of the participant and group showed the following. *Please note on the Bonferroni post-hoc tests the mean difference is significant at the 0.5 level.

In the male low risk population nude females caused a greater blink (mean=.143) than did clothed females (mean=.249). This difference was significant. Amongst the low risk females nude females caused a greater blink (mean=.215) than did clothed females (mean=.268). This was significant. Nude female images (mean=.191) caused a significantly greater blink in the male non- sexual; offenders than did clothed females (mean=.266). Nude male images (mean=.213) caused a significantly greater blink in the low risk males than did clothed males (mean=.261). Amongst the low risk female population nude males (mean=.229) caused a significantly greater blink than did clothed males (mean=.287).In the category of non sexual offending males, nude males caused a greater blink (mean=.233) than did clothed males (me **a**n=.247). This difference was not significant.

Table D 30: Mean difference (AB nude/clothed females)

Source Females	**Image Category type**	**Mean Difference**	**Sd. Error**	**Sig**	**95% Confidence Interval**
	Nude/clothed				
Male Low Risk		-.106	.025	.000*	-1.56-.057
Female Low Risk		-.054	.020	.008*	-.093-.014
Male Non Sexual Offenders		-.076	.018	.000*	-.039--.112

Table D31: Mean difference (AB nude/clothed males)

Source Males	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
	Nude/clothed				
Male Low Risk		-.049	.024	.044*	-.096-.001
Female Low Risk		-.058	.019	.003*	-.096--.020
Male Non Sexual Offenders		-.014	.018	.446	-.049-.022

The significant three-way interaction between the image gender x image age x combined sex of the participant and group showed the following. Please note on the Bonferroni post- hoc tests the mean difference is significant at the 0.5 level.

In the male low risk sample young females produced a greater blink (mean=.186) than old females (mean=.206). This difference was not significant. In the female low risk sample old females (mean=.241) created a greater blink than did young females (mean=.242), this difference was not significant. The male non sexual offender group had a significantly greater blink for young females (mean=.206) than for old females (mean=.251).

The males of the low risk sample had a greater blink for old males (mean=.229) than for young males (mean=.245). Females in the low risk group showed a greater blink for young males (mean=.240) over old males (mean=.275). In the male non sexual offender group, they showed a greater blink (mean=.232) for old males over young male (mean=.249) none of these differences were significant.

Table D32: Mean difference (AB young/old females)

Source	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Females	Young/old				
Male Low Risk		-.0.02	.021	.367	-.063-.023
Female Low Risk		-.002	.017	.927	-.036-.033
Male Non Sexual Offenders		-.046	.016	.005*	-.077-.014

Table D 33: Mean difference (AB young/old males)

Source	Image Category type	Mean Difference	Sd. Error	Sig	95% Confidence Interval
Males	Young/old				
Male Low Risk		-.016	.023	.497	-.063-.031
Female Low Risk		-.036	.019	.062	-.073-.002
Male Non Sexual Offenders		-.017	.017	.322	-.052-.017

Appendix E: SCID Questions

The SCID contains 109 items which are answered using a 3 point likert scale where 1= not at all, 2=perhaps a little and 3= very much.

Q1. Have your feelings always been badly hurt if someone criticises you or disapproves of something you say or do (even if the criticism is very minor)

Q2. Have you had any close friends (do not include relatives)

Q3. Have you always avoided getting to know people unless you are certain they will like you?

Q4. Have you often avoided social situations or jobs that involved having to deal with a lot of people?

Q5. Are you usually quiet when you are in a group of people because you are afraid of saying something that other people will think is silly

Q6. Have you usually been afraid that you may show that you are anxious in front of other people by blushing?

Q7. Have you avoided doing things that are outside your usual routine because they often seem dangerous, difficult or exhausting

Q8. Have you needed a lot of advice or reassurance from others (on most days) before you could make every day decisions

Q9. Have you allowed other people to make most of the very important decisions in your life for you (e.g. where to live, what job to take)

Q10. Have you often agreed with people even when you think they are wrong because you want them to like you?

Q11. Have you found it impossible to start work on most tasks when there is no one to help you?

Q12. Have you often done unpleasant or demeaning things in order to get other people to like you (do not include efforts to get promoted at work)

Q13. Have you often made a great effort to avoid being on your own

Q14. Have you usually felt helpless when close relationships end?

Q15. Have you often worried, that people you care about will leave you?

Q16. Have you often had a lot of trouble finishing jobs because you have spent so much time trying to get things exactly right?

Q17. Have you often been pre-occupied with details or rules or lists or schedules to such an extent that, the major point of what you are doing has been lost

Q18. Have you often insisted that other people do things exactly the way you want or done them yourself because you think they will not do them correctly

Q19. Have others often said that you are so devoted to your work that you have no time left to enjoy yourself

Q20. Have you often had difficulty making decisions (delayed or not made) because you always worry about what are the most important factors to consider in making decisions

Q21. Have you had higher moral standards than most people about what is right and wrong?

Q22. Have people complained that you are not affectionate enough or do you recognise that you find it difficult to show tender feelings

Q23. Do other people think that you are stingy?

Q24. Do you not give other people your time or gifts when you think that you won't get any personal gain out of it?

Q25. Have you had trouble throwing things out because they might come in handy some day and has this caused clutter where you live?

Q26. Have you often put off doing things that other people ask you to do until the last minute and has this resulted in things not getting done

Q27. Have you become irritable or sulky whenever you have been asked to do something you don't want to do?

Q28. Have you worked slowly or done a bad job when you have been asked to do something that you really don't want to do

Q29. Are people always asking you to do unreasonable things (including your family?)

Q30. Have you pretended to forget to do things you were supposed to do because you didn't want to do them?

Q31. Have you often thought that you were doing a better job than others gave you credit for

Q32. Have you always felt annoyed when people have made suggestions about how you could get more work done (even if their suggestions are probably reasonable?)

Q33. Have people often complained that you were holding them up by not doing your share of the job

Q34. Have you respected any of your previous bosses?

Q35. Have you often had friends or bosses who have taken advantage of you or let you down?

Q36. Do you always refuse help from other people because you do not want to bother them?

Q37. When something has gone well have you felt depressed or felt that you didn't deserve it or have you done something to spoil your success

Q38. Have you often said or done things that have made other people very angry with you, which then made you feel very hurt or humiliated

Q39. Have you often turned down the chance to do things that you really enjoy or have you not admitted to others that you have enjoyed yourself?

Q40. Are there many things which you could have achieved in your life but you haven't because you didn't push yourself hard enough?

Q41. Have you become disinterested or bored with everyone (including family) who has ever been nice to you?

Q42. Have you always tried to help other people even if this has caused you a lot of inconvenience and you have not been asked for help?

Q43. Have you always had to watch out for people trying to use you or hurt you?

Q44. Have you generally been unable to trust your friends or the people you work with?

Q45. Have you always picked up hidden messages in what other people do or say which are directed at you in a special way?

Q46. Do you still bear strong grudges against most people who have insulted or criticized you?

Q47. Have you found it better not to let other people know too much about you, in case they use the information against you later?

Q48. Have you always felt angry when someone has criticised or insulted you (even for minor things?)

Q49. Have you often suspected that your partner (wife, husband, boyfriend or girlfriend) has been unfaithful?

Q50. When you have seen other people talking together, do you often wonder if they are talking about you?

Q51. Do you always feel very nervous when you are in a group of people that you don't know very well?

Q52. Have you had a lot of experiences with the supernatural or do you have special powers to see into the future or do you have a sixth sense (like ESP)

Q53. Have you often sensed that a dead person or force were around you or have you often seen odd things that turned out to be a shadow or a silhouette

Q54. Have other people often told you that you look scruffy or dirty or have they commented that you often talk to yourself

Q55. Have people often told you that the way you speak is very odd

Q56. Have people told you that you act in a silly manner or that you look as if you think you are above other people or that you don't show your feelings with your facial expressions

Q57. Have you needed close relationships with other people like your family or friends?

Q58. Have you almost always preferred to be on your own at work and at home and not needed the company of other people at all

Q59. Have you ever had strong feelings like anger or joy?

Q60. Have you always been content not having any sex?

Q61. Have you EVER (even once) been upset by criticism

Q62. Have people commented that you seem to be unemotional or cold

Q63. Have you often gone out of your way to get people to praise you?

Q64. Would you dress in a sexy way in situations where other people might disapprove or have you flirted with people even when it is not really appropriate?

Q65. When you have been out have you usually been concerned that other people will find you attractive

Q66. Have you been a demonstrative person (e.g. embracing people that you have just met or a tendency to cry easily over minor things?)

Q67. Do you usually attract attention in a group of people and do you feel left out if you are not being noticed

Q68. Have other people often commented that your mood seems to change from happy to sad & from sad to happy, very quickly (within minutes)

Q69. Have you been the kind of person who can't wait to get what you want if you really want it and do you find it hard to work for something that will take a long time to pay off?

Q70. In normal conversation do you often speak in a very theatrical way as if you are playing a dramatic part in a play?

Q71. When you have been criticised have you often felt very angry or ashamed or put down even days later

Q72. Have you sometimes had to use other people to get what you want or often had to sweet talk someone to get them to do what you want

Q73. Have you often thought that you should be recognised as a person with extra special talents or abilities?

Q74. When you have had any problem have you almost always insisted on seeing the top person?

Q75. Have you often spent hours and hour's day-dreaming about achieving great things or being famous or being very good looking or having an ideal love affair?

Q76. Because you are an important person, do you think that it should not be necessary for you to have to follow simple rules that ordinary people follow (like lining up in a queue)

Q77. Has it been very important to you that other people show you their admiration for your abilities?

Q78. Have people often said that you are self centred or uncaring

Q79. Have you experienced feelings of envy on most days?

Q80. Have you had lots of ups and downs in your relationships and does your opinion about your partner change from thinking they are ideal at times to thinking they are terrible at other times

Q81. Have you done impulsive things in at least of the following ways:- had sex with people you don't know/ used illegal drugs/ driven very dangerously/ stolen / binged on food until you feel sick

Q82. Has your mood constantly been changing (within hours or days) from feeling normal to feeling severely, suicidally depressed and then back to normal again

Q83. Have you often lost control and hit people or thrown things

Q84. Have you threatened to hurt yourself (or actually harmed yourself e.g. by overdose or cutting) on more than occasions

Q85. Do you constantly and frequently keep changing your aims in life so that you don't know who you really are

Q86. Have you spent time, on many occasions, feeling bored or empty inside

Q87. If you had thought your partner was leaving you, would you become frantic and be prepared to do absolutely anything (even if it caused you harm) if it would stop him or her leaving you

Q88. Have you avoided work for months or more when you were fit to work or often left a job without arranging for another job or taken a lot of time off work when you were fit to work

Q89. Have you often broken the law, for which you could have been arrested, even if you were not caught

Q90. Have been in repeated physical fights either with strangers, friends or your partner or have you hit and bruised a child while disciplining it

Q91. Have you often not paid people back when you owed them money or failed to provide money for your children

Q92. Have you ever travelled around without any clear plans for the future (do not include holidays) or had no regular place to live for at least one month

Q93. Have you lied a lot or pretended you were someone else or conned others to get what you want

Q94. Have you driven a car while drunk on several occasions or have you had more than one speeding ticket from the police

Q95. Has anyone ever said that you were not taking proper care of a child in your care

Q96. Have you been unfaithful to your partner on three or more occasions

Q97. Have you thought that it was OK to have broken the law or hurt somebody

Q98. Did you often skip school

Q99. Did you run away from home and stay out overnight on at least occasions

Q100. Did you often start fights

Q101. Did you use a weapon in more than one fight

Q102. Did you ever force someone to have sex with you

Q103. Did you ever hurt an animal on purpose (not hunting)

Q104. Did you ever physically hurt another person on purpose (not in a fight)

Q105. Did you deliberately damage other people's property (do not include setting fire to it)

Q106. Did you set fires to other people's property

Q107. Did you lie a lot (do not include lies to avoid physical or sexual abuse)

Q108. Did you steal someone else's property, on more than one occasion, when that person was not present

Q109. Did you ever steal directly from another person while they were there